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ABSTRACTS

I. ORGANIC FIBERS

CURRENT DEVELOPMENTS. Current textile progress. A. J. Hall. *Am. Dyestuff Reptr. 34,* 340-43 (Aug. 27, 1945). Digests are given of three patents and one article which constitute important new developments in textile technology. A process of "animalizing" cellulose fibers which gives a wool-like coating fast to crabbing, scouring, and milling, consists in impregnating cloth with a resin made by the reaction of dicyandiamide or guanidine with resorcinol and formaldehyde, followed by drying and heating (Brit. P. 560, 121). White and Richardson have improved the fluidity test for damage in linen goods by adding a small amount of an antioxidant to the cuprammonium solution so that it is stable enough to be filtered to remove the insoluble impurities (lignin and epidermis) removed from the linen in the preliminary digestion with caustic soda (*J. Textile Institute 1944,* 35, 53T). Nylons can be made by interpolymerizing a mixture of hexamethylene diamine and tetramethylene diamine with sebacic and adipic acids (Brit. P. 556, 946). Washproof resin compositions for treating textiles are made by mixing methyl or ethyl cellulose with methylated hexamethylol melamine resin; the ratio of cellulose ether to melamine should not exceed 4:1 (Brit. P. 560, 115).

FIBER REGAIN. Fiber regain data simplified. C. H. Reumann. *Textile World 95,* No. 6, 101-3 (June 1945). Charts are given from which the moisture regain of wool, cotton, acetate and viscose rayon, silk, and nylon can be determined fairly accurately for any dry-bulb temperature between 20 and 220° F. under conditions of adsorption and desorption. The uses to which information on regain is put in the textile industry are mentioned. Commonly accepted figures on standard regain at 70° and 65% relative humidity, taken from the literature, are tabulated, and figures on moisture adsorption of textile fibers given in the 1944 edition of *Heating & Ventilating Guide* for relative humidities between 0 and 100% are graphed. Charts also show the moisture content of air at various dry-bulb temperature and relative humidities, and the difference between wet- and dry-bulb temperatures at various dry-bulb temperatures and relative humidities. All the data included are for a pressure of one atmosphere.

FIBER RESEARCH. Fibres into yarns. E. Ostick. *Fibres 6,* 67-8 (August 1945). The first of a series of articles on the properties of specific fibers outlines the objects of research on the physics of fibers and emphasizes the importance of work done so far on the production of synthetic fibers.

FIBERS. Types of man-made fibres. W. T. Astbury, Imperial Chemical Industries, Ltd. *Endeavour* (reference not cited). Reprinted in *Indian Textile J. 55,* 708-10 (July 1945). Regenerated celluloses and proteins, and synthetic fibers, such as Vinyon and nylon, are treated in a very brief account of man-made fibers. Pictures and figures show a scale model of two consecutive links in the cellulose chain; crystals of edestin; fibers of Vinyon and nylon, and the fibers made from arachin and casein; and x-ray diagrams of stretched and contracted Vinyon.

GERMAN FIBERS. Developments in the German chemical industry. Industrial Intelligence Staff, Chemical Warfare Service, U. S. Army. *Chem. Eng. News 23,* 1516-22 (September 10, 1945); *Chem. & Met. Eng. 52,* No. 9, 115, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, (September 1945), No. 10, 192, 194, 196, 198, 200, 202, 204, 206, 208 (October 1945). During the war the Germans introduced textile fibers made of polyurethanes. The most important combination was hexamethylene diisocyanate with butanediol-1, 4. The fibers are equivalent to nylon in all but water absorption and dyeing characteristics, in which they are superior. "The polyester type was also made, and the I. G. polyamide type from 5-aminocaproic acid (5-caprolactam). Much work was done on the improvement of the process for making cellulose acetate and regenerated cellulose . . . Hexamethylene diisocyanate, and other diisocyanates were also used to produce a surface-treated, water-resistant viscose rayon. The cuprammonium process was also greatly improved as regards both ammonia and copper recovery . . . so that in cost this process was considered comparable with the viscose route. Special acid- and chemical-resistant fibers were woven of polyvinyl chloride (chlorinated and unchlorinated) and also of polyethylene fibers."

INDIAN TEXTILES. Distribution of Indian textile production. Lalbhai R. Mehta. *Indian Textile J. 55,* 705-7 (July 1945). A severe stricture of the Indian government's policies for distribution of textiles in India, which is having a clothing "famine" in some sections, contains statistics for February 1945 on the production for war purposes, for export, and for civilian consumption of seven grades of cloth.

KHADI. The economics of khadi *versus* mill cloth. V. G. Ramakrishna Ayyar. *Indian Textile J. 55,* 696-8 (July 1945). An article full of statistics on the relative amounts made and the cost of making hand-woven (khadi) and mill cloth in India concludes that although the market price of mill cloth is slightly lower, chiefly because of the lower cost of labor, it is to India's advantage to encourage hand weaving. The large volume of employment it would give to part-time agricultural work-

ers, who need the extra money, would increase the prosperity of India as a whole.

MACHINERY FOR INDIA. Post-war textile machinery supplies. Visit of Indian Industrial Delegation to the United Kingdom. Anon. *Indian Textile J. 55,* 607-10 (June 1945). Textile machinery for Indian industry. P. C. Jain. *Ibid.,* 693-5 (July 1945). In the next five years Indian cotton mills will have to replace at least 5,000,000 spindles and 100,000 looms, and a proportionate amount of bleaching, dyeing, and printing machinery. The chances for getting machinery from the United States probably are poor, because in normal times India imports less than 1% of the U. S. output of textile machinery, and U. S. firms cannot afford to sacrifice their old customers. The chances for getting automatic machinery in sufficient quantity from the United Kingdom are poor, too. India, therefore, is urged to expand her capacity for manufacturing textile machinery.

RECONVERSION. Am. Wool Cotton Reptr. 59, No. 37 (September 13, 1945). The "V-J Victory and Reconversion Issue" of *Am. Wool Cotton Reptr.* contains the following articles, which are anonymous, unless otherwise stated: Raw material important post-war problem, pp. 15-16, 61, 63, 65; Cotton now marching home with hopes and fears, Clinton T. Anderson, Secretary of Agriculture, pp. 17-18; Reconversion plans for cotton goods, pp. 19-20; Rayon markets anticipate quick reconversion, pp. 21, 23; Optimistic outlook for woolens and worsted, pp. 25, 27, 29; Knit goods industry facing many handicaps, pp. 31, 33; Textile machinery in the post-war period, pp. 35, 65; and We won war fifty years ago, pp. 37, 39, 41, 43, and 45, which is a plea for protective tariff. There are a number of short statements by: Russell T. Fisher, National Association of Cotton Manufacturers, p. 49; William P. Jacobs, American Cotton Manufacturers Association, pp. 49, 51; Arthur Besse, National Association of Wool Manufacturers, pp. 51, 53; Roy A. Cheney, Underwear Institute, p. 53; Alice C. Moore, National Association of Finishers of Textile Fabrics, pp. 87, 89; E. Kent Swift, Whitin Machine Works, pp. 89, 91; John A. McPherson, industrial engineer, pp. 91, 93; and J. Pfister, American Cyanamid Co., p. 93.

SOUTHWESTERN TEXTILES. Southwestern textiles inspired by native designs. H. S. Busby. *Textile Colorist Converter 67,* 862-3, 893, 895, 898 (July 1945). The Southwest contains a factory in Texas for garnetting 1000 lb. per hr. of cotton to make insulation, stuffing for mattresses, biological and industrial batting, and, after impregnation, special filler-battens. The spinning and weaving industry in this section of the country is handicapped severely by its lack of direct contact with the markets, sufficiently skilled men for foremen and other managers, and modern twisting equipment and looms. A further handicap is the distance of the textile school at Lubbock, Texas, from the textile mills. Conversely, the region is fortunate in offering healthy,

ingenious, and satisfied common labor; and in having a well-developed consciousness of the value of Indian and other native designs. A cotton with a linen-like weave and an Indian design are shown to illustrate this last point. There has been talk of building rayon plants in the Southwest.

SWEDISH TEXTILES. Fibres outlook in Sweden. Anon. *Fibres 6,* 74 (August 1945). A short, statistical account of the Swedish textile industry (cotton, wool, and rayon) in normal times states that "since 1939, Sweden has specialized in a wide range of paper textiles. It is impossible to judge how much of this development is permanent and how much is due to the lack of fibres as a result of war conditions. The manufacture of paper textiles is now being taken seriously in the United States and modern methods of reinforcement or impregnation open up new fields. Two new uses of paper in Sweden, for the manufacture of sacks and bags in place of jute, and for paper twines, will probably become permanent applications."

FIRST REPORT OF TEXTILE TEAM SENT TO GERMANY BY QUARTERMASTER CORPS. Office of the Publication Board Publication OPB-11, Department of Commerce, Washington, October 2, 1945; 42 pp.; gratis. This preliminary report of the men sent by the U. S. Army Quartermaster Corps to Germany to investigate the German textile industry during the war contains the following papers: The Zellwolle Lehrspinnerei at Denkendort, by Earl Heard; Organization and research in Germany, by Joseph P. Meierhans; German methods for utilizing unretted flax and hemp as a textile fiber, by John F. Hagen; Woolen and worsted industries in Germany, by Werner von Bergen; an investigation of the textile dyeing and printing industry in Germany, by Frank S. Richardson; and German manufacture of continuous and staple fibers and related products, by Lloyd L. Leach. The final report, which was being printed at the time this report was released, will cover these topics in more detail and contain translations of reports published by the Zellwolle Lehrspinnerei. An "index" to the final report is given on pp. 2-3 of Meierhans' paper.

I, 1. Vegetable

ABACA VS. MANILA. Abaca instead of manila? Anon. *Fibres 6,* 59 (August 1945). Now that "manila" is being obtained from a number of countries other than the Philippines "it is a little incongrous to describe" fiber from *Musa textilis* as manila. "The tendency in the United States is now to use the word abaca." "A ruling on the point from the Hard Fibres Associations in the United Kingdom and the United States would be helpful."

BELGIAN FLAX. Belgian flax and linen. Anon. *Fibres 6,* 60 (August 1945). A short statistical account of the Belgium flax and linen industry before the war contains the statement that Belgium has resumed the export of flax.

COIR INDUSTRY. Co-ordinating the coir industry. Anon. *Fibres 6,* 57-8 (August 1945). India and Ceylon should organize the coir industry so that families or small village groups can be brought into a strong society cooperating with the few large-scale establishments already existing. Such a cooperative society could sponsor needed research on the industrial possibilities for coir and coir yarn, and on the retting and preparation of the fiber. It could also improve the system of grading and marketing the fiber.

CORDAGE FIBERS. Impact of the war on the soft and hard fibre industry. Alfred Wigglesworth, Wigglesworth & Co., Ltd. *Fibres 6,* 61-3 (August 1945); *Fibres, Fabrics & Cordage 12,* 335-7 (August 1945). In a discussion of the effects of war on the present position and future prospects of a number of fibers it is stated that British-grown flax, which is not retted, has not been satisfactory and will be displaced by imports as soon as they can be resumed. It is stated further that Africa has come forward as a producer of sisal. In 5½ years of war 800,000 tons were shipped, mainly to Great Britain and to the U. S., where it was used satisfactorily for a number of products for which abaca and hemp normally are demanded. Hemp of good quality was shipped in small amounts from Chile and India, but how much will be shipped after the war is not known. Other unknown factors in the situation are the Russian flax industry, the European hemp industry, and the condition of the Philippine plantations.

COTTON FARMING. Sound farm practices pay off in Georgia. J. E. Moses, National Cottonseed Products Association. *Cotton & Cotton Oil Press 46,* No. 19, 7 (September 22, 1945). The average yield of lint cotton increased from 191 lb. per acre in 1934 to 381 lb. per acre in 1943 on 15 demonstration farms in Catoosa County, Georgia. At the same time, the average net labor income was increased from less than $700 in 1934 to more than $2000 in 1943. "Such records as these prove again the value of soil improvement practices, proper fertilization, crop rotation and the right balance of livestock with food, feed and cash crops."

COTTON LINTERS. How research and modern merchandising established a new market for cotton linters. William H. Jones, The Railway Supply & Manufacturing Co. *Cotton & Cotton Oil Press 46,* No. 19, A-3-4 (September 22, 1945). An outline is given of the research done by The Railway Supply & Manufacturing Co. to develop new uses for cotton linters. Linters are being sold to paper companies; the chemical industry; manufacturers of mattresses, comforters, pads, etc.; and to textile mills.

COTTON TEXTILES. Cotton textiles need promotion, Delaney asserts. Anon. *Southern Textile News 1,* No. 3, 15 (September 13, 1945). "Cotton textiles have lagged behind other divisions of the textile industry and behind other industries ... in promotions and public relations. 'Very few of the advances made in cotton textile technology have been capitalized on.'" These statements are taken from the report of a speech by Ward Delaney, Institute of Textile Technology, before the annual meeting of the Southern Combed Yarn Spinners Association.

COTTON TRADING. Recent changes in futures trading in cotton. Kishorlal R. Marfatia, Narandas Rajaram & Co., Ltd. *Indian Textile J. 55,* 611-6 (June 1945). An article on the changes made since July, 1942, in the Indian Cotton Contract contains an outline summary of the principal features of the present Indian Cotton Contract. The manner in which "this contract has been aligned to the Government purchase plan for Indian cotton" is discussed.

DDT. DDT—and how to use it. Anon. *Cotton & Cotton Oil Press 46,* No. 18, 5 (September 8, 1945). "The value of the DDT insecticides for control of insects attacking cotton has not been fully determined." Recommendations are made for cotton growers who wish to test them. Directions are given for applying sprays and emulsions of DDT to control flies, mosquitoes, cockroaches, and insects in grain bins, warehouses, and mills.

FLAX. A future for American flax? Anon. *Fibres, Fabrics & Cordage 12,* 329 (August 1845). Flax industries of the United States and Canada are surveyed briefly. Growers in the United States must "be prepared to meet competition with improved varieties, better machinery and cultural practices which will permit of marketing a higher quality fibre at a competitive price", according to a report of a speech by Glen Ritchie, president of the Oregon Flax Association. The Canadian industry is still in its infancy. Statistics show its growth from 1939 to 1944. In the latter year 6000 tons of fiber were grown on 42,000 acres by about 9000 members of a farmers' cooperative and were handled by 43 scutch-mills.

INDIAN COTTONS. Improved types of cotton in the United Provinces. B. L. Sethi and M. A. A. Ansari, Department of Agriculture, United Provinces. *Indian Farming* (reference not cited). Reprinted in *Indian Textile J. 55,* 726-7 (July 1945). The superiority of C520 and Perso-American cottons developed by the Department of Agriculture of the United Provinces to native cottons is demonstrated by figures on yields, staple lengths, and values of the three collected over a seven-year period in government farms.

KAPOK. Future of kapok. Anon. *Fibres 6,* 74 (August 1945). "The chief industrial wants supplied by kapok have been those where insulating, resilient or buoyant qualities were required. The first of these qualities is possessed in marked degree by glass fibres, and the second and third by various rubber substitutes now available ... The U. S. Kapok Association does not expect permanent rivalry from milkweed but synthetics may offer serious competition. Nevertheless, several factors favour kapok.

The fibre has not been in excessive supply during recent years; research . . . is at a comparatively early stage. Moreover, the successful spinning of kapok . . . should not be beyond human ingenuity . . . Although the woven fabric is yet to be attained, kapok is ordinarily available in sheets of varying thickness . . ."

KAPOK. The over-all specific volume of kapok. W. Howard Rees, British Cotton Industry Research Association. *Shirley Institute Memoirs 19,* 295-313 (July 1945). The over-all specific volumes of kapok fibers of different origins were determined by compressing them at desired pressures into a polished brass cylinder and measuring the thickness of the resulting layer. The results were correlated with the pressure, temperature, and the "humidity histories" of the samples. Volume recovery after compression to densities about 10 lb. per cu. ft. and over is very slow under ordinary conditions, but is accelerated sufficiently rapidly by high temperature and humidity that kapok-filled life jackets actually become more bouyant as they become water logged. The damage done by compression is shown to be the flattening of the cylindrical fiber, which becomes cylindrical again when sufficiently moist. For all the fibers examined, data are given on the length, diameter, weight per unit length, over-all specific volume of a single fiber, and bouyancy of a single fiber. These data are said to be the first published on many of the fibers. Photomicrographs show the effects of successively higher baling pressures.

LINEN. Linen—"Aristocrat of fabrics." Having met wartime conditions Irish linen industry plans for the future. J. M. Henderson, Government of Northern Ireland Office, London. *Textile Age 9,* No. 9, 62, 64, 66, 68 (September 1945). A short statistical account of the flax and linen industries of Northern Ireland during the war period concludes with the recommendations that: (a) about one-third of the industry's requirements of flax fiber—the produce of 100,000 acres—should be flax grown in the British Isles to avoid complete dependence on foreign supplies; and (b) all purchases and distribution of flax fiber and tow should be made through a statutorily appointed state corporation for at least three or four years after the termination of the war.

MILKWEED FIBER. The utilization of the milkweed plant in the paper and paperboard industry. Loren V. Forman and Donald Niemeyer, Institute of Paper Chemistry. *Paper Trade J. 121,* TAPPI 95-100 (September 6, 1945). A study of the possible utilization of milkweed in paper manufacture concludes that "because of the lower yield of pulp and the requirements for special processing to reduce the dirt content, bleached milkweed pulp probably would not be able to compete with the common wood pulps"; and that "the use of the stalks in paperboard manufacture should be technically feasible." The article contains tables showing the yields of fiber prepared from the whole stocks by various methods; chemical analyses of the stalks and separated fractions; yields of pulps from stalks

bleached in various ways; conditions adopted for rod milling and screening of the stalks; yields on cooking and washing the bast fiber; yields obtained from bleaching the bast fiber in various ways; strength characteristics of pulps produced from bast fiber; physical characteristics of board made from stalks, woody fiber, and roots; and data on the cooking conditions used for preparing fiber for board.

PITA FLOJA. Lesser known fibres. Pita floja. Anon. *Fibres 6,* 70 (August 1945). Pita floja, a member of the pineapple family grown in Central and South America yields a light-cream white, lustrous, fine, flexible, hard fiber having a breaking strain of 50 km. (compared with 23 km. for cotton and 31.8 for manila). The fiber contains 75% cellulose and is resistant to sea water. All the systems thus far developed for decorticating pita are unsatisfactory.

SISAL RESEARCH. Objectives of sisal research. Anon. *Fibres 6,* 64-7 (August 1945). Although there are patents proposing methods for softening sisal fiber, thus far "no commercial development has been attempted". A research program started recently at Leeds University will attempt to remedy this situation, improve the recovery of fiber from the plant, and find new uses for the non-fibrous portions. This last problem has been studied by others investigating "the possibility of deriving industrial alcohol and cellulose from the waste, or for using the waste in the manufacture of paper". Sisal research at Lambeg, Northern Ireland, in 1935-39 was "disappointing". Pictures show the bundling of harvested leaves, their decortication, and the drying of the sisal.

U. S. LINEN. The future of all-American linen in world competition. Robert McBratney, Jr., Robert McBratney & Co. *Textile Colorist Converter 67,* 854-5, 892 (July 1945). Short-fiber flax, available in limited amounts from flax grown in the U. S. for seed, is being spun into a few grades of thread and woven into relatively coarse cloth. The flax is retted chemically, passed between fluted rollers to remove still more bark, drawn into slivers, spun into thread, and woven on automatic looms. The machinery, which is not described, is said to be specially designed and patented. Too many unknown factors enter into the picture for McBratney to predict the future of this American flax industry. However, "based on comparisons now available, such as they are, the difference in price is not too great between the domestic linen and its foreign counterpart in the few grades in which the domestic product is made."

COTTON HARVESTER. Cotton harvesting machine. Charles R. Berry (½ to Hugh A. Gamble). USP 2 387 004, October 16, 1945. A cotton harvesting machine includes movable supports for operation in the field, a passageway for plants through the machine formed of spaced walls with openings "for the lateral exposure of cotton fibers" and intended to confine the plants within the pas-

sageway, means at the side of the passageway for removing exposed cotton fibers, and means for propelling the plants toward the rear of the passageway. The propelling means operates at the same relative speed as that with which the machine moves forward and sideways. These means comprise a rotatable member with a number of flexible, elastic arms attached to it for "yieldingly confining the plants opposite the cotton removing means."

CELLULOSE PREPARATION. Low resin content cellulose. Gustave Ullmann. Can. P. 429 514, August 21, 1945. Cellulose of high quality is prepared by heating a non-textile cellulosic material (wood pulp) with a solution of alkali metal hydroxide containing a dispersing agent and a metal compound from the group comprising aluminum hydroxide and calcium hydroxide. The metal compounds separates resinous matter from the cellulosic material. Sulfonated castor oil is the only dispersing agent claimed specifically.

TEXTILE PACKAGING METHOD. George R. Browner (to The Mead Corp.). Can. P. 430 932, October 30, 1945. A method of baling textile materials comprises placing the material to be baled between wrapper units consisting of a major body portion of paper board and a minor edge portion of fabric with the textile material to be baled extending at each end "a substantial and shock absorbing distance" beyond the edge of the paper board, compressing the material to be baled between the wrapper units, folding the edges of the wrapper units so they overlap, applying bale ties while the pressure is maintained, and connecting the fabric portions to provide fabric-end covers for the shock absorbing portion of the bale. The paper board used is creased perpendicular to the end edges and along lines corresponding to the edges of the completed bale.

COTTON HARVESTER. Nicolas Boudikine. Can. P. 430 974, October 30, 1945. A machine for harvesting comparatively thick and/or hard or semihard stems of cotton, sugar cane, etc., consists of a motor-driven vehicle and a cutting mechanism at the side of the vehicle (the cutting mechanism comprises several motor-driven circular saws mounted overlappingly on a lateral casing so that the circular saws follow one after the other in a direction transverse to the one in which the vehicle is traveling), the circular saws of which are arranged slightly below the under-surface of the casing at a distance of about two inches from the ground so that after the stems have been cut by the saws, the machine can pass freely over the stubs left in the ground.

I, 2. Animal

INDIAN WOOL. Indian wool industry. Noteworthy experiment at Patan. M. H. Shah. *Indian Textile J. 55,* 628-62 (June 1945). The State of Baroda, India, is conducting an experiment at Patan in the breeding of sheep and the marketing of their wool, which in two years has been so successful that it is to be extended to include other parts of the State. The wool produced from unimproved native sheep is exceptionally fine, and breeding has improved the quality still further. Other parts of India are advised to copy this program.

LLAMA FIBER. Animal fibers. II, III. The South American cameloids. A. C. Whitford. *Textile Age 9,* No. 8, 70, 72, 74 (August 1945); No. 9, 80, 82, 84, 86-7 (September 1945). The animal itself, the fleece, and the appearance and characteristics of the hairs and noils of the South American cameloids are described with the aid of photographs. The animals are the guanaco (*Llama glama*), the guanouito, the llama (*Llama glama glama*), the alpaca (*Llama glama pacos*), the vicuna (*Llama vicuna*), and the misti and huarizo, which are crosses between the alpaca and the llama.

WATER ABSORPTION. Absorption of water by wool. A. B. D. Cassie, Wool Industries Research Association. *Trans. Faraday Society 41,* 458-64 (August-September 1945). The water-vapor pressure isotherm of wool is shown to be influenced greatly by the hydrostatic pressure on the sorbed water caused by the mechanical properties of the fibers. An isotherm at 25°C. and reduced to one hydrostatic pressure is given. It does not show the sigmoid inflection of the experimental curve. "An investigation of the absorption-desorption hysteresis of wool suggests that this is largely due to the mechanical hysteresis of the fibers." Analysis of the isotherm reduced to one hydrostatic pressure, by means of the theory of multimolecular absorption shows the agreement between theory and experimental observations to be excellent. On the average there are 1.12 mol of low energy sites per 100 g. of wool, which is close to the number of mols, 1.11, of CO-groups per 100 g. of wool. Therefore, it is suggested that the CO-groups are the chief water-attracting groups in wool. The heat of absorption of water on the sites is 3500 cal. per mol.

WATER-VAPOR PERMEABILITY. Permeability of keratin membranes to water vapour. G. King, Wool Industries Research Association. *Trans. Faraday Society 41,* 479-87 (August-September 1945). The rate of diffusion of water vapor through horn 0.005 cm. thick was investigated "over a range of vapour pressure gradients" at 20, 25, and 30°C. The diffusion coefficient is function of the water concentration and the temperature, but is independent, to a large extent, of the elasticity of the keratin lattice. Cassie's theory of sorption is applied "with some success" to the experimentally derived relation between the diffusion coefficient and the concentration of water. The method of setting up the experiments is explained, and the results are graphed. "An appendix . . . explains quantitatively the apparent reduction in permeability of the membrane due to residual air in the 'high pressure' side of the system."

TREATING WOOL. Unified process for treating wool. Wallace Paul Heintz and Walter Hardie

Zillessen (to E. I. du Pont de Nemours & Co., Inc.). USP 2 387 510, October 23, 1945. Loose wool is converted into finished fabric by a unified process comprising: impregnating loose wool with a neutral, soap-free composite reagent consisting chiefly of saturated petroleum hydrocarbons having not less than 16 carbon atoms per molecule and the sulfonates of similar hydrocarbons—the sulfonates are present in large enough amounts to disperse the whole in water and the unsulfonated hydrocarbons are present in large enough amounts to lubricate the wool; subjecting the loose wool to carding, spinning, and forming into fabric; adding water, and fulling the fabric under neutral, soap-free conditions; and finally scouring the fulled fabric with water free of soap and alkali to remove the composite reagent.

SHEARING MACHINE. Roger L. Griffin and Norman Y. Moore (to A. C. Lawrence Leather C., Inc.). USP 2 387 579, October 23, 1945. In a shearing machine there are combined with a supporting roll over which the skin to be sheared is flexed, a shearing device operated close to the supporting roll for trimming the fur off the flexed skin, a feed roll beyond the shearing device in the direction of feed, an adjacent pressure roll for pressing the trimmed skin against the feed roll, and means for positively rotating the rolls to feed the work past the shearing device.

WOOL PACKING. A. D. F. Sampson. Brit. P. 567 672. Wool-baling apparatus consists of a rectangular frame which fits around the mouth of a wool pack, the top edges of which are secured to the frame. The frame supports the pack within a filling box. The filled bale is transferred to a press —the frame keeps the mouth of the pack open— and, after a supplementary amount of wool has been added, the bale is compressed.

DEHAIRING SKINS. Skin processing method. Edward F. Christopher (to Industrial Patents Corp.). Can. P. 430 925-7, October 30, 1945. Hair and wool are removed from hides and skin, respectively, by subjecting the hides and skins to the action of an aqueous alkaline solution containing an alkali sulfide and a small proportion of an acid amide of a low molecular, nitrogen free, monocarboxylic acid, e. g. formamide (Can. P. 430 925); a water-soluble compound or derivative of cyanic or thiocyanic acid which yields salts in alkaline solution (Can. P. 430 926); or cyanamide or its water-soluble compounds and derivatives (Can. P. 430 927).

A Capsule Course on Wool. American Wool Council, Inc., New York, N. Y., 1945; 18 pp.; gratis. A short, popular account of the processing of wool, its properties, and geographical distribution; and the care of woolen garments in the home.

I, 3. Artificial

CENTRIFUGE. Centrifuging machine. Henry Crewdson (to American Viscose Corp.). USP 2 383 240, August 21, 1945. In apparatus for treating filamentary material, claim is made to several centrifugal buckets, axially movable means in the buckets, several motors, spindles concentric with the movable means and connecting the motors directly with the buckets, means for moving the buckets and motors continuously in a predetermined path, means for operating the motors during a portion of the motion, and a cam at a different portion of the path. The buckets comprise a platform for supporting the filamentary material. The cam is arranged "to axially move said movable means to at least partially eject said filamentary material from said buckets when they pass said portion."

WASTE CUTTER. Moulton L. Hudson (to American Enka Corp.). USP 2 384 031, September 4, 1945. A knife assembly for cutting waste strands from a rotating godet comprises a rotatable unit with axial guides, a bracket extending from the side of the unit, a knife mounted for oscillation in the bracket, means connected to the knife for oscillating it to cutting positions, and means normally urging the knife to an inoperative position.

STAPLE FIBER. Manufacture of staple fiber. Arthur L. Jackson (to American Enka Corp.). USP 2 384 032, September 4, 1945. Apparatus for converting continuous filaments into staple fibers comprises a source of continuous filaments, a staple cutter arranged in the path of the filaments, an outlet for discharging the cut fibers, means for receiving the cut fibers as they are discharged, a vertical rotary wheel above the fiber receiving means and consisting of a series of radial compartments for initially receiving and holding the cut fibers, means for delivering the cut fibers into successive compartments at one side of the wheel so that when the wheel is rotated the compartments are elevated, means for spraying a liquid into the compartments "during their elevated path of travel in order to open and separate the fibers and a second liquid spray means positioned above the point where the liquid and fibers normally commence to discharge from the respective compartments..." In this manner "a substantially uniform discharge of fibers is effected continuously."

SPINNERET. Large rectangular spinneret. Paul J. Hayes (to E. I. du Pont de Nemours & Co., Inc.). USP 2 385 856, October 2, 1945. A rectangular spinneret comprises a rectangular face plate containing orifices; a spinneret adaptor containing an approach chamber shaped like a pyramid, the base of which is open and one side of which is connected to an inlet port; a hump between the inlet port and the pyramid for deflecting incoming, filament-forming composition toward the spinneret orifices; and means for connecting the face plate to the open base of the pyramidal chamber.

HANDLING FILAMENTS. Handling filamentary materials. Robert J. Taylor (to American Viscose Corp.). USP 2 385 894, October 2, 1945.

Filaments are stretched in a continuous process by "continuously introducing the material at one portion of its path longitudinally in zigzag conformation between two sets of spaced, parallel, tactile members transverse of the material." The members of one set alternate with and are spaced from those of the other set in such an arrangement that the tactile surfaces of one set are on the side away from the tactile surfaces of the other set. The material is then discharged at another portion of its path from engagement by the members. During at least a part of the time of the engagement of the material between the members, motion is imparted to the members as a unit to effect translation of the material without substantial sliding with respect to at least some of the members. Concurrently material is introduced "at another portion of its path in advance of the point of discharge by the first two sets of members between another two sets of similarly related members", and motion is imparted to these members as a unit at a higher rate of speed than that of the motion of the first two sets of members. The advantages postulated for this method in the specification are: hollow filaments are not flattened and no filaments are condensed.

ARTIFICIAL FILAMENTS. Apparatus for the production of artificial filaments. Maurice P. Kulp, Frederick Morehead, Wayne A. Sisson, and Wesley L. Webb (to American Viscose Corp.). USP 2 386 163, October 2, 1945. Apparatus for producing artificial filaments comprises a spinneret with spaced orifices; a septum dividing the space behind the orifices into several separate, nonconcentric regions, any adjacent two of which communicate with each other inside of the spinneret in the vicinity of the orifices facing the edge of that portion of the septum dividing the adjacent regions; and a conduit with at least two separate channel systems, each system being associated with at least one of the regions, for introducing filament-forming material into each of the separate regions. The filaments produced in this apparatus are said to be highly crimped.

FILAMENT MANUFACTURE. Device for collecting filamentary materials. Robert J. Taylor (to American Viscose Corp.). USP 2 386 411, October 9, 1945. A spinning machine has a container for holding the liquid spinning bath, a spinneret in the liquid, a winding core at least partially immersed in the body of the liquid, a long hollow cylindrical guide entirely under the body of liquid for conducting the filamentary bundle from the spinneret to the core (this guide is pivoted near its entrance end), and means for "traversing" the discharge end of the guide with respect to the core.

THREAD CUTTER. Thread cutting mechanism. Charles A. Reimschissel and Harry Davies (to Landis Machine Co., Inc.). USP 2 387 294, October 23, 1945. A "thread-cutting" mechanism has a head with several cutters mounted for inward and outward movement, and controlled by a rockable cam; means for rocking the cam during the cutting to cause the production of tapered thread, comprising a member movable in accordance with the threading operation; a lever pivoted to this member; a link pivotally connecting the lever and the cam ring, normally in such a position that displacement of the member is reflected as a proportional angular displacement of the cam, and means for rocking the cam by minor amounts independently of the lever and member, comprising a trunnion journalled in the link and lever, and having eccentric and concentric bearing portions; and means for rocking the trunnion through a predetermined angle about the axis of the concentric bearing portion to displace the pivotal axis of connection between the link and the lever.

GODET. Henry J. McDermott (to American Viscose Corp.). USP 2 388 068, October 30, 1945. A rotatable godet for handling filaments has a support, an open face away from the support, and at least one notch in the peripheral rim surrounding the open face. The rim is free of projections.

ARTIFICIAL FILAMENTS. Artificial textile material. Raymond D. Reel (to Camille Dreyfus). Can. P. 429 876, September 4, 1945. Apparatus for stretching a single end of thread has combined with a chamber for the application of a softening medium to a travelling thread, means for feeding the thread at a constant speed into the chamber, and means for drawing the thread out of the chamber, control means responsive to the degree of softness of the thread for changing the speed of the thread drawn from the chamber.

FILAMENT PRODUCTION. Filament or thread production. Albert W. Keight (to Camille Dreyfus). Can. P. 430 202, September 18, 1945. A method of making artificial filaments or threads varying in diameter along their length by extruding a spinning solution through orifices into a setting medium comprises supplying spinning solution at a constant rate and pressure to a confined space connected directly to the point of extrusion and extruding the spinning solution at a varying rate. The varying rate of extrusion is effected by withdrawing a portion of the spinning solution from the confined space and returning this portion to the confined space and the bulk of the spinning solution by the following cycle: apply a quick increase in pressure on the withdrawn portion of the spinning solution, slowly release the increased pressure, and allow a period of constant pressure.

FILAMENT PRODUCTION. Filament and ribbon producing apparatus. George DeWitt Graves (to Canadian Industries, Ltd.). Can. P. 430 247, September 25, 1945. Molten compositions used for forming filaments and ribbons by extrusion and which are subject to decomposition with the formation of bubbles are extruded by placing them under sufficient pressure to eliminate the bubbles, metering the bubble-free compositions to an extruder, and extruding them. In all the steps, the composition is maintained under enough pressure to prevent re-

formation of bubbles. The apparatus is claimed as well as the equipment. Polyhexamethylene adipamide is named as the molten composition in one claim.

FILAMENT PRODUCTION. Filament and film production. Henry Dreyfus. Can. P. 430 344, October 2, 1945. Artificial textiles are produced by shaping "a fused composition" and setting it by cooling. The fused composition comprises a phenol and a synthetic thermoplastic fiber-or film-forming polyamide, which in the absence of other agents, requires a temperature of the order of at least 200°C. for shaping in the molten condition. The phenol-polyamide mixture is of such composition that it fuses at temperatures not exceeding 100°, but is solid at 35°.

FIBER PRODUCTION. Thermoplastic material fibre producing apparatus. Ed Fletcher and Henry J. Snow (to Fiberglas Canada, Ltd.). Can. P. 430 417, October 2, 1945. Fibers of thermoplastic material are produced by passing the stream of molten thermoplastic material between intermeshing, gear-shaped members to attenuate it to a fiber; and by projecting the fiber into the atmosphere beyond the range of these forces. The reactive effect of the atmosphere on the projected fibers is reduced by imparting to the atmosphere movement in the general direction of fiber travel.

FILAMENT PRODUCTION. Filament and ribbon producing apparatus. George DeWitt Graves (to Canadian Industries, Ltd.). Can. P. 430 428, September 25, 1945. In the continuous melt-spinning of filaments, yarns, and ribbons from molten synthetic polymers subject to bubble formation above their melting points, claim is made to the steps of: withdrawing in a closed system from a given quantity of molten polymer, successive fractional portions and extruding these portions continuously; continuously maintaining the withdrawn portions during their extrusion at a pressure sufficiently high to eliminate bubbles; and, during the extrusion of one of the successive portions, subjecting at least a portion of the remainder of the given quantity of polymer to a partial vacuum, and then to a pressure at least equal to the extrusion pressure, and next passing, under pressure, another of the successive portions from the remainder of the given amount of polymer for continuous extrusion.

I, 3a. Cellulosic rayons

RAYON. American Viscose plans expansion. Anon. *Am. Wool Cotton Reptr. 59,* No. 39, 35 (September 27, 1945). The American Viscose Corp. has completed plans for an expansion program to increase its production of rayon by 100,000,000 lb. a year. The largest plant will be the one to be constructed at Radford, Va., to produce 55,000,000 lb. viscose rayon staple to be used chiefly in spun rayon fabrics. The other production will be obtained by enlarging the acetate rayon plant at Meadville, Pa., and the viscose rayon staple plant at Nitro, W. Va. The company's present production is at the rate of 260,000,000 lb. annually.

COLORED MATERIAL. Edmund Stanley, Christopher Stanley Argyle, and Henry Charles Olpin (to British Celanese, Ltd.). USP 2 383 995, September 4, 1945. Colored fibers of cellulose esters or ethers containing 0.1 to 1% of a 1,4-di-(arylamino)-anthraquinone are made by spinning the cellulose derivative from a solution containing the dye. Anthraquinones in which the aryl groups are phenyl, o-anisyl, and m-tolyl are claimed specifically, but many other groups are disclosed in the specification. The dyes are blue to green in color, and resist washing and gas fading.

TREATING YARNS. Treatment of cellulose derivative articles. Robert Wighton Moncrieff and Charles William Sammons (to British Celanese, Ltd.). USP 2 387 168, October 16, 1945. Dry artificial yarns, foils, etc., made of acetone-soluble cellulose acetate steam-stretched to increase their tenacity and having an extensibility of 10% or less, are impregnated with an anhydrous solution containing 30 to 55% by volume of cyclopentanone in the absence of tension great enough to stretch them, and the solution is removed by scouring on the completion of the treatment. The material is shrunk and thus made more extensible. According to the specification, contact times of 30 to 60 seconds at 50-60°C. suffice to increase the extensibility "substantially", without lowering the tenacity. Cyclic ketones other than cyclopentanone are disclosed, but not claimed, and gasoline is disclosed as the solvent. It is important that the solution be anhydrous and the yarns dry at the time of the treatment, because 0.2-0.5% water increases the shrinkage 5 to 10 times.

SOLVENT RECOVERY. Recovery of carbon bisulphide. Enrique L. Luáces (to Research and Development Corp.). USP 2 387 763, October 30, 1945. A method of recovering carbon disulfide from freshly coagulated rayon comprises: washing these products at a temperature between 65 and 70°C., collecting the vapors driven off, intimately contacting these vapors with a liquid regenerative absorbent to absorb hydrogen sulfide, and afterwards effecting intimate contact between the residual vapors and a solid adsorbent for removing carbon disulfide. No solid adsorbent is claimed by name; activated carbon of the sort described by Godel in USP 1 674 897 is mentioned in the specification. Aliphatic amines containing no carboxyl and carbonyl groups, and boiling substantially above room temperature; a tertiary aliphatic amine; ethanol amine; triethanolamine; methylene blue; and ammonium hydroxide are claimed in that order as the regenerative absorbent.

CELLULOSE ACETATE YARN. Cellulose acetate yarn and process. Robert M. Hoffman (to E. I. du Pont de Nemours & Co., Inc.). USP 2 387 791, October 30, 1945. A process for dry-spinning filaments of cellulose acetate comprises heating an acetone solution containing 25 to 32% by weight of cellulose acetate to a temperature between 50 and 70°C., and extruding the heated solution through circular-orifices 0.10 to 0.30 mm. in

diameter into an atmosphere comprising at least 1500 grams of acetone vapor per cubic meter of atmosphere and kept at 85 to 115°C.

PURIFYING CELLULOSE. G. B. Fowler. Brit. P. 567 774, October 30, 1945. Raw cellulosic materials are treated to give a pure cellulose suitable for the production of fibers by impregnating them with an acidic substance in the presence of a wetting agent, and then treating them with chlorous acid or one of its salts, or with chlorine dioxide.

SPINNING RAYON. Rayon spinning: fans controlled by movement of enclosing doors. American Viscose Corp. Brit. P. 568 393. In an enclosed rayon-spinning machine, the escape of noxious gases is prevented by providing an arrangement for synchronizing the operation of the exhaust fans in response to the opening and closing of the sash enclosing the spinning machine.

VISCOSE PRODUCTION. Coagulating bath for viscose. American Viscose Corp. Brit. 568 394. Viscose is extruded into a precipitating medium containing a condensation product of an aliphatic alcohol, an "anhydro derivative of it", or a sugar with ethylene oxide containing at least 9 ethylene oxide groups in the molecule. The product is free of groups more hydrophobic than a hydrocarbon radical of 5 carbon atoms. In one example, viscose is extruded into a bath containing 8-12% sulfuric acid, about 20% sodium sulfate, about 5% zinc sulfate, and 0.01% of a condensation product of ethylene oxide with mannitol, containing 100 units of ethylene oxide in the molecule.

ARTIFICIAL FILAMENTS. Artificial textile materials. Robert Wighton Moncrieff and Harold Bates (to Henry Dreyfus). Can. P. 429 875, September 4, 1945. Artificial textiles are improved by subjecting "filamentary materials which have a basis of an organic derivative of cellulose, and which have been stretched in hot water or steam and which thereafter have been subjected to an esterifying operation" to the action of an aqueous solution of a swelling agent for the cellulose derivative. At the temperature used the treatment does not shrink the material. The time of contact is sufficient to ensure uniform treatment of the filaments through their entire cross-section.

TREATING FABRICS. Textile fabric. William Harry Macartney. Can. P. 429 912, September 11, 1945. The strength of rayon is increased by treating the fibers with an incompletely condensed urea-formaldehyde resin and octadecyl oxymethyl pyridinium chloride in aqueous suspension in the presence of ammonium acetate, and by baking the fiber to complete the condensation of the resin and to liberate pyridine from the pyridinium chloride. Other resins and softening agents are claimed, but not named.

FILAMENT MANUFACTURE. William Whitehead (to Camille Dreyfus). Can. P. 430 203, September 18, 1945. Rayon yarns, filaments, etc., of voluminous appearance are made by subjecting them to the action of a hot aqueous solution of 0.02-15% by weight, based on the amount of cellulose derivative to be treated, of a lower fatty acid ester of sucrose. The filaments or yarns must be free of tension and not yet "associated into fabric."

STRETCHING YARNS. Textile article production. Henry Dreyfus. Can. P. 430 345, October 2, 1945. Subsequent to their formation, artificial yarns "and similar articles", made of an acetone-soluble cellulose acetate, are stretched, and the stretched yarns are saponified. The cellulose acetate has a viscosity between 40 and 120 (the units are not given in the *Can. Patent Office Record*) and is obtained by ripening a primary cellulose acetate with the weight of the original cellulose of water. In one claim, 40-100% water and sulfuric acid are specified as ripening agents.

FILAMENT PRODUCTION. Filament and film production. Robert Wighton Moncrieff, Edward William Wheatley, and Harold Bates (to Henry Dreyfus). Can. P. 430 458, October 2, 1945. Artificial filaments, threads, yarns, bristles, foils, films, etc., are made by heating above its melting point a composition comprising a cellulose ester of a fatty acid containing at least four carbon atoms, and a volatile liquid which dissolves the ester at atmospheric temperatures; shaping the molten composition; and setting the shape by cooling it to a temperature below its melting point. The volatile liquid is an aromatic hydrocarbon or a halogenated aromatic hydrocarbon. The proportions of cellulose ester and solvent are such that the composition is solid below 30°C.

DRYING RAYON CAKES. Rayon cake drying method. Rudolph A. Bierwirth (to Radio Corp. of America). Can. P. 430 686, October 16, 1945. Moisture-laden rayon cake is heated to expel the water by subjecting all parts of the cake concurrently to an oscillating electric field of the order of 15 megacycles per second while maintaining the cake at a partial vacuum such that water will evaporate in it at a temperature not over 140° F.

I, 3b. Protein fibers

PROTEIN SOLUTIONS. The reaction between ground nut protein, caustic soda and water. Some physicochemical studies. R. H. K. Thomson and David Traill, Imperial Chemical Industries, Ltd. *J. Society of Chem. Indus. 1945,* 229-31 (August). The viscosities and flow properties of caustic soda solutions of the peanut proteins, arachin and conarachin, were determined at 20°C. at 10, 20, 30, 40, 50, and 60 hours after the solutions were first prepared, and after 20 hours' reaction at 20, 35, 50, 60 and 70°. "In both group [s] . . . the variations of the protein-caustic soda water ratio were set out on the basis of the Latin square with caustic soda and protein as independent variables and water as a dependent variable". The viscosity was measured by a simple Couette-type viscometer providing a shear

of about 15 c. g. s. units for one revolution per second and the rate of whose rotation could be varied over a wide range. The results are presented in Latin square diagrams, and are said to be capable of interpretation in the light of Astbury's hypothesis that the globulin molecules are spheroidal and that in solution they uncurl to form long chain molecules which react.

CASEIN FIBERS. Treatment of casein or the like protein fibers. Robert Louis Wormell (to Courtaulds, Ltd.). USP 2 383 358, August 21, 1945. Fibers of casein or similar protein are hardened with a liquid having a specific gravity higher than that of the fibers by: continuously feeding the tow of fiber onto the surface of a bath of the liquid so that the convolutions of tow float on or in the liquid; allowing the tow to harden; and drawing the tow continuously from the treating liquid at the same rate at which it is fed. By drawing the tow from the underside of the mass of convolutions and conducting it from the liquid through guides below the level of the underside of the tow, entanglement of the tow is avoided.

ARTIFICIAL FILAMENTS. Manufacture and production of artificial threads, filaments, and the like. Robert Louis Wormell and Claude Leonard Knight (to Courtaulds, Ltd.). USP 2 385 674, September 25, 1945. The resistance of casein threads to attack by boiling aqueous liquids is increased by treating the casein threads in a bath containing formaldehyde, alkali metal sulfate, and sufficient sulfuric acid to convert at least a large proportion of the sulfate into bisulfate—"the sulphuric acid content of the bath" is "equivalent to a normality of the order of about 3.7 to about 5.1"—and washing and drying the threads. It is important to avoid any appreciable increase in the concentration of sulfuric acid in contact with the threads.

CASEIN THREADS. Improved casein threads. R. L. Wormell (to Courtaulds, Ltd.). Brit. P. 567 904. The properties of lactic casein threads are improved by treating the coagulated and preliminarily hardened thread in a bath containing formaldehyde, at least 30% by weight of calcium chloride, and 3 to 7% hydrochloric acid. The threads acquire improved resistance to hot liquids and to the plastifying action of dilute alkalis, and possess improved wet strength.

ALGINATE FILAMENTS. Spinning of alginate threads. E. E. Tallis (to Courtaulds, Ltd.). Brit. P. 568 177. Filaments are produced by spinning a solution of sodium alginate into a bath containing a salt of an alkaline earth metal, a small amount of a cation-active compound, and a small proportion of an organic acid. Free mineral acid and oil are absent from the solution. The threads do not adhere to each other, so that it is not necessary to add oil to the bath.

I, 4. Synthetic

ARTIFICIAL FILAMENTS. Textile material

production. Henry Dreyfus. Can. P. 430 466, October 9, 1945. A process for the production of artificial filaments comprises extruding a fluid, synthetic, thermoplastic, highly polymeric, film-forming substance into a two-zone chamber filled in the first zone with an inert gas or vapor; cooling the filaments in this first zone to a temperature at which air no longer can damage the polymer; passing them to a second zone filled with air, and to which air is admitted; withdrawing a mixture of the inert medium and air from the chamber at the common boundary of the two zones; and withdrawing the filaments from the chamber.

ARTIFICIAL FILAMENTS. Filament and film production. Henry Dreyfus. Can. P. 430 467, October 9, 1945. A process for the manufacture of filaments, fibers, etc., comprises extruding a solution containing a filament-forming synthetic polymer and an organic solvent for the polymer into a current of "evaporative medium" heated to a temperature of at least 150°C. and exceeding the boiling point of the solvent, and then running the extruded products through a current of cold air to complete the setting by the rapid chilling. The solution for extrusion is of such concentration that it is liquid at ordinary or moderate temperatures.

I, 4a. Nylon type

POLYESTER AMIDES. High molecular weight linear polyester-amides. Carl J. Frosch (to Bell Telephone Laboratories, Inc.). USP 2 386 454, October 9, 1945. Fibers of microcrystalline linear polymers are made by cold-drawing the product made by condensing a mixture of a monoalkylolamine with an aliphatic dicarboxylic acid, held "under polymerizing conditions until substantially completely reacted". The monoalkylol amine has at least one hydrogen atom attached to the nitrogen atom and can have its amino and hydroxyl groups separated "by a straight paraffin polymethylene chain of at least two carbon atoms". The dicarboxylic acid has its carboxyl groups separated "by a straight paraffin polymethylene chain of at least three carbon atoms". The amounts of amine and acid are chosen so that the carboxyl groups are "equimolecularly equivalent to the sum of the amino and alcoholic hydroxyl groups". The products of reaction of monoethanol- and of 1,10-decanolamine with sebacic acid, and of 1,10-decanolamine and adipic acid are claimed specifically. Polymerization conditions are given in seven examples.

ARTIFICIAL WOOL. Artificial wool manufacture. Vernal Richard Hardy (to Canadian Industries, Ltd.). Can. P. 430 251, September 25, 1945. In the course of making crimped filaments from "a melt-spinnable, crystalline synthetic linear polymer" the molten polymer is extruded through a spinneret into a heated gas zone maintained at a temperature of at least 50°C. but not more than 10° below the melting point of the polymer. The temperature of the heated zone and the time required

for the passage of the extruded polymer through it are controlled so as to allow the polymer to cool gradually in order to induce "the formation of crystals of nonuniform size in the resilient filaments."

FILAMENT PRODUCTION. Filament and foil production. Robert Wighton Moncrieff and Charles William Sammons (to Henry Dreyfus). Can. P. 430 457, October 2, 1945. A process for the manufacture of artificial filaments, threads, yarns, films, foils, etc., comprises shaping a solution of a highly polymeric fiber- or film-forming polyamide in a phenolic solvent and setting it in an organic liquid consisting of a "substantial" proportion of a ketone of the formula

$$R_1.CO.R_2,$$

where R_1 is methyl or a substituted methyl radical, and R_2 is a methyl or ethyl radical or a substituted methyl or ethyl radical. Acetone, methyl ethyl ketone, chloracetone acetol, acetol methyl ether, and acetol acetate in 70-96% concentration are specified in one claim.

ARTIFICIAL FILAMENTS. Robert Wighton Moncrieff and Charles William Sammons (to Henry Dreyfus). Can. P. 430 602, October 9, 1945. Artificial filaments, fibers, threads, yarns, films, foils, etc., are made by shaping a solution of a fiber- or film-forming polyamide and setting it in a liquid which is a non-solvent for the polymer. In one claim the liquid is "at least 2 per cent of" formic or acetic acid; in another it is phenol plus "at least 2 per cent of" formic or acetic acid; and in yet another it is a 40-50% solution of acetic acid in water.

SYNTHETIC FIBERS. Synthetic fibre production. Edward W. Rugeley, Theophilus A. Field, Jr., and John F. Conlon (to Carbide and Carbon Chemicals, Ltd.). Can. P. 430 517, October 9, 1945. Textile fibers of uniform softness, strength, flexibility, and extensibility are made from polyvinyl halides by extruding a dispersion of the resin through orifices to form filaments, drying the filaments in an "evaporative atmosphere", collecting the filaments to form a thread, delustering the thread by wetting it with water, aging it by immersion in water heated above 50°C., stretching the aged thread when wet, setting the stretch of the thread by immersion in water heated above 50° while the thread is under tension, and softening the thread by "rapidly flexing the thread by repeatedly and abruptly changing the direction of travel of the thread at a sharp angle while being drawn at high speed and while immersed in water." The fibers so produced are claimed also.

I, 4c. Condensation resin fibers

FILAMENT MANUFACTURE. Reuben Thomas Fields (to Canadian Industries, Ltd.). Can. P. 430 252, September 25, 1945. Coarse filaments of at least 0.020 in. diameter are prepared from "a synthetic linear condensation polymer" by melting the polymer under a blanket of carbon dioxide gas at a pressure not exceeding atmospheric, introducing the molten polymer into a screw pump having an intake capacity several times greater than its discharge capacity, and delivering the molten polymer under pressure to a spinneret.

I, 5. Applications as fibers

DECORATIVE SHEETS. Decorative surfacing material. Alfred A. Glidden (to The B. F. Goodrich Co., Inc.). USP 2 383 598, August 28, 1945. Adherent sheet material for providing a finished surface on an article to which it is applied comprises an intermediate foundation layer of elastic, vulcanized rubber composition; a layer of decorative material, e. g. flock particles, "adhered" to a face of the foundation layer; and a layer of pressure-adhesive, unvulcanized rubber composition on the other face of the foundation layer. Doubled sheet material having finished surfaces on both sides is made by pressing two of the above sheets together with their decorative sides out.

INSULATION. Method and apparatus for making sheet material. Clarence J. Davies (to National Automotive Fibres, Inc.). USP 2 383 849, August 28, 1945. Claim is made to the method and apparatus for making sheet material by ironing the surface of a sheet of loosely aggregated, fibrous material, e. g. cotton, with thermoplastic binder dispersed through it. Ironing is done without compacting the body of the sheet "by slidingly engaging" the surface with smooth, heated, ironing element(s). The body of the final sheet is relatively soft and resilient.

FIBROUS ARTICLES. Method of and apparatus for making fibrous articles. Victor T. Paré (to Radio Corp. of America). USP 2 384 958, September 18, 1945. Fibrous articles are made by causing the fibers in a liquid suspension to be accreted simultaneously on the entire surface of a former, maintaining a portion of the former relatively stationary while accreting fibers on this portion, and simultaneously vibrating another portion of the former while accreting fibers on it. Thus the fibers accreted on the latter portion are arranged more compactly than the fibers on the first portion.

WEB MANUFACTURE. Method of forming web material. Romie L. Melton (to The Carborundum Co., Inc.). USP 2 385 873, October 2, 1945. Flexible, fibrous, non-lammelar webs are manufactured by feeding a number of carded, fibrous membranes from carding cylinders onto a moving endless support, passing the membranes through an electrostatic field to charge each individual fiber of the membrane and to bring them "into position for interlocking with the fibres of adjoining membranes without disruption of the membranous structure", applying an adhesive binder to the web, and removing it from the support.

BATT MANUFACTURE. Material handling apparatus. Rudolf F. Hlavaty. USP 2 387 150, October 16, 1945. A lapper for making batts is provided with a main conveyor; two dollies movably

mounted in the lapper, and engaging and moving with the conveyor; means for reciprocating the dollies; means for giving one of the dollies a travel one-half that of the other; and a second fixed conveyor mounted between the paths of the dollies. The dollies move in opposite directions.

TEXTILE FABRIC. Raymond E. Reed (to The Kendall Co., Inc.). USP 2 387 354, October 23, 1945. A textile is composed of a mixture of cotton (or other) fibers and de-esterified cellulose ester fibers, intimately mixed in an unorganized relationship, and united at intersecting points by coalescence of the fibers themselves at spaced points.

TEXTILE FABRIC. Raymond E. Reed (to The Kendall Co.). Can. P. 430 808, October 23, 1945. Textiles are made by mixing textile-binder fibers having "normally latent coalescent properties" with other textile fibers until the binder fibers are distributed throughout at least the outer surfaces of the fibrous mass, applying a solvent for the binder fibers to the material so prepared, and confining the application of the solvent to the outer surface only of the mass, so that the fibers in the treated surface unite into a net-like structure and the fibers in the mass adjacent to the treated area will not be coalesced. The two sorts of fibers may be carded before they are made into a web for treatment.

I, 5a. Insulation

ELECTRIC INSULATION. Insulated conductor and insulation therefor. James Franklin Hyde (to Corning Glass Works, Inc.). USP 2 386 466, October 9, 1945. Electric insulation is composed of glass fibers impregnated with a resinous organo-silicon oxide composition "comprising essentially silicon atoms, oxygen atoms, phenyl radicals and ethyl radicals, said silicon atoms being joined to each other by said oxygen atoms through silicon-oxygen linkages, said phenyl and ethyl radicals being attached to silicon atoms through carbon-silicon linkages, said composition having an average molecular weight above 1300."

ELECTRIC CABLE. Raymond Courtney Smythe (to Western Electric Co., Inc.). Can. P. 430 309, September 25, 1945. An electric cable comprises a core, several continuous glass-fiber yarns wound about the core in a continuous layer and with a long lay, "an open serving" of fibrous material wound over the continuous layer but in an opposite direction to bind the continuous layer to the core, and a covering of insulating material.

INSULATION. Thermal insulating material. Clark C. Heritage (to Wood Conversion Co.). Can. P. 430 599, October 9, 1945. Thermal insulation comprises an aggregate of ligno-cellulose fibers coated with a small amount of asphalt or unvulcanized rubber and felted to form a mat, and means confining and compressing the mat. The fibers are characterized by a coarseness modulus between 70 and 250. When dry and not felted, they have a free-footage not less than 6 board-ft. per

lb. At a density corresponding to 3.15 board-ft. per lb. they have a specific felting resistance of 20-80 lb. per sq. ft. and a specific elasticity of not less than 50 lb. per sq. ft.

I, 5b. Plastic filler

PLASTIC. Thermosetting plastic material. Le Grand Daly. USP 2 384 015, September 4, 1945. A thermosetting composition for molded articles comprises a synthetic resin base, including a major proportion of an alpha phase phenol furfuraldehyde, a minor proportion of calcium stearate, and further comprising a filler material, including substantial proportions of lignin, cotton floc, and cotton fabric waste, and a substantial proportion of polychloroprene.

RESIN MANUFACTURE. Resin-bearing fibrous pulp article manufacture. Edward E. Sawyer (to Keyes Fibre Co., to The Canal National Bank of Portland). Can. P. 430 397, October 2, 1945. In the manufacture of articles made from resin-bearing fibrous pulp, the resin is mixed intimately with the fibers in a liquid vehicle, flat blanks are formed from the liquid mixture on foraminous forming dies, the blanks are removed and dried, and at least one of the blanks is put into one of a pair of dies to be hot pressed into a configuration differing substantially from that of the blank. In the pressing operation, the conditions of temperature and pressure are such that the melted resin and fibers flow into every contour of the die cavity; and the dies are kept closed and under pressure until the resin hardens.

I, 5c. Coated or impregnated products

FRICTION FACING. Method of manufacturing friction facing and like materials. Maurice Sallé (to Thermold Co., Inc.). USP 2 388 187, October 30, 1945. Friction facing is manufactured by first compounding the fibers, solid particles of a "frictioning agent", and the normally non-cementitious, heat-reactive binder in the dry state to obtain a uniform mix; suspending the mix in water to form a flowable slurry in which the uniform dissemination of the ingredients is preserved; flowing the slurry onto a filter bed and removing the water by gravity to form an interfelted fibrous mass in which the fibers extend in all directions; applying heavy suction to the filter to withdraw more water from the interfelted mass; subjecting the mass to "cold pressure" to express out still further moisture; drying the compressed mass at a temperature low enough not to affect the binder; and finally applying heavy pressure and heat to the mass "to densify" the binder and convert it to its cementitious state.

FIBROUS SHEETS. Fibrous sheet material manufacture. Robert Pickles and John Pickles. Can. P. 430 718, October 23, 1945. A process for manufacturing an artificial fibrous material consists in carding a mass of waste vegetable textile fibers into a dry web or fleece, at least 90% of which are not longer than two millimeters and the remainder

of which do not exceed ten millimeters; impregnating the carded mass with a binder in aqueous dispersion; compressing the impregnated mass into sheet or board and simultaneously expressing the excess impregnant; and drying the product. The proportion of fibrous mass to the binding agent in the finished product is 50 to 80 pounds of the former to from 50 to 20 pounds of the dry weight of the latter.

II. INORGANIC FIBERS

II, 1. Natural

ASBESTOS TREATMENT. Lee C. Pharo (to Johnson's Co.). USP 2 386 713, October 9, 1945. A method of treating asbestos fiber containing dust comprises washing masses of fiber to remove the dust without roping the fibers, dewatering and drying the washed masses to form sheets, fiberizing the sheets by flexing them while they are supported, and blowing the fiberized sheets against a resistance element to liberate the individual fibers without reducing their staple length. The apparatus is claimed also. In the specification it is stated that, based on its spinning qualities, all the batches of chrysotile asbestos from "a large Canadian mine at Thetford Mines, Quebec", treated by this process was sold to the textile trade at $330 per ton in May 1942.

ASBESTOS SEPARATING. Lee C. Pharo (to Johnson's Co.). USP 2 386 714, October 9, 1945. Apparatus for treating asbestos containing lumps comprises a perforated conveyor, means for depositing a loose mass of asbestos on the conveyor, and stirring means in the path of the conveyor for moving the material eccentrically in local areas of the conveyor as it is being advanced. By this process lumps gravitate to the bottom and pass through the openings in the conveyor. The stirring means include a series of flexible members arranged over and parallel to the conveyor surface, and means for flexing the members. The flexible members include fingers extending down to points close to the surface of the conveyor. The method is claimed too.

ASBESTOS PROCESSING. Lee C. Pharo (to Johnson's Co.). USP 2 386 715, October 9, 1945. Asbestos masses are treated to separate the individual fibers in the longer spicules and eliminate the extremely short fibers "without removing the short fibers it is desirable to retain in an unopened state" by feeding them into one end of a closed, unobstructed, horizontal passage, having a perforated area to allow the escape of the very short fibers by gravitation; moving the masses through the passage by subjecting them to the action of a succession of intermeshing rotating beating arms, extending through the passage and inclined with respect to the longitudinal axis of it; "passing the beating arms closely adjacent to one another while rotating them in intermeshing relation for agitating and advancing the mass thereby to cause the fibers from the long spicules to be liberated and the extremely short fibers to escape by gravitation". The beating arms are "moved at a speed equivalent to the speed at which arms about one foot long would intermesh with each other between 200 and about 250 times per minute". This speed is sufficiently high to keep the long fibers suspended.

SUPERFINE ASBESTOS. Superfine asbestos production. Abraham van Winsen (to The Honorary Advisory Council for Scientific and Industrial Research). Can. P. 430 679, October 16, 1945. Chrysotile asbestos fibers are reduced to a mass containing at least 5% of fibers invisible at magnifications of 3000 diameters (this 5% having diameters of about 300 A and a ratio of length to diameter of not less than 100), by rapidly flexing and squeezing a bundle or pencil of chrysotile asbestos fibers, while permitting the liberated fiber to spread in the neutral region of the stressed material, in such a manner that the action is restricted to a narrow area with respect to the length of the fiber. This process opens the pencils without producing excessive transverse rupture.

II, 2. Artificial

ALUMINUM FIBER. Aluminum fibre. Anon. *Fibres 6,* 81 (August 1945). Two types of aluminum yarn are to be made by the Reynolds Metal Co. One is made only from aluminum and the other from aluminum coated with cellulose acetate. Both types will be made by stretching strips of aluminum cut from large rolled sheets. One pound of aluminum can be stretched to 11,000 yards. For the present the aluminum fiber is intended to replace "French tinsel" for decorating textiles and clothing. Both types of fiber require considerable skill in weaving and finishing, "but it is believed that technique can successfully be adapted to the special requirements of the fibre."

II, 3. Applications as fibers

ASBESTOS-CEMENT PIPE. Manufacture of bell-end pipe. Ralph L. Barbehenn (to Johns-Manville Corp.). USP 2 383 582, August 28, 1945. A method of manufacturing bell-ended pipe of asbestos-cement to form a finished product stated to compare favorably with cast iron for water pipe is described and claimed.

MINERAL WOOL. E. E. Grant and W. May (to Stillite Products Ltd.). Brit. P. 568 516. Mineral-wool articles are manufactured by mixing the reacting components of a synthetic resin in solution with prefabricated mineral wool fibers, and then heating the mixture. "The wool is made by the steam-jet fiberising method and has been treated with an organic substance, e. g. starch, glue, etc. (capable of swelling in water and forming a colloidal dispersion), and with a water-repelling agent such as paraffin wax. The above substances are injected into the steam used for blowing the wool."

MINERAL WOOL. Impregnating mineral wool with resin. E. E. Grant and W. May (to Stillite

Products Ltd.). Brit. P. 568 574. Materials consisting of mineral wool made by "the steam-jet fiberising method" are manufactured by injecting the reacting components of a synthetic resin in solution into the steam-line feeding the jets, so that the resin is synthetized simultaneously with formation of the fiber, and is distributed through them uniformly.

III. NONFIBROUS MATERIALS

III, 1. Plastics, resins, rubber

GERMAN PLASTICS. Plastics in Germany. Anon. *Technical News Bull. Nat'l. Bur. Standards* No. 342, 75-6 (October 1945). Gordon M. Kline's survey of the advances in production and applications of plastics in Germany during the period 1939-45, showed that "German manufacturing processes and fabricating technics are well advanced. Their engineers have placed great emphasis on the development of continuous processes for the preparation of the raw materials and their conversion into plastics. Four methods of polymerization have been utilized: block or mass, emulsion, pearl or granular, and solution." Like us, they made polyvinyl chlorides, polyacrylates, polyamides, and polystyrenes. They also made several less common plastics—polyvinyl ethers, polyvinyl carbazole, polyethyleneimine, and polyurethanes. The preparation and uses of these novel types are discussed briefly. Special compositions and catalysts were developed for phenolic, urea, melamine, aniline, and alkyd resins. A resin was prepared from acetylene and butylphenol for improving the working properties of synthetic rubber. Kline's full report will be published by the Office of The Publication Board, U. S. Dept. Commerce, as publication O. P. B. No. 8, Plastics in Germany.

KRISTON. Transparent plastic. *Chem. Eng. News 23,* 1654 (September 25, 1945). A noninflammable, thermosetting plastic named Kriston is being made by the B. F. Goodrich Chemical Co., Cleveland. It has a specific gravity of 1.25, a refractive index of about 1.57, a much lower shrinkage during polymerization than any known type of material, a high dielectric strength and electric resistivity, a high resistance to abrasion, and the ability to be made in a wide range of colors, transparent, translucent, or opaque. Some immediate applications will be in the optical, electric, and chemical and processing industries.

RESIN FILMS. The future is bright for synthetic resin films. Frederick Dannerth, Industrial Research Chemist. *Textile Colorist & Converter 67,* 866-7 (July 1945); *Textile J. of Australia 20,* 279-80 (August 20, 1945). Excerpts from a speech before the American Association of Textile Technologists state the many probable uses to which unsupported and supported synthetic resin films will be placed. Cotton voiles, marquisette, bobbinet, filet, ninon, scrim, and cheesecloth will be the chief fabrics used for supporting the films. Chief of the problems

to be solved is the formulation of correct printing inks.

CELLULAR MATERIAL. Cellular thermoplastic material. William Ivan Taylor (to Henry Dreyfus). Can. P. 430 329, September 25, 1945. Cellular, thermoplastic materials are produced by mixing with a thermoplastic material a solvent for it "in such proportions as to form a plastic composition that is not flowable under ordinary temperatures and pressures", subjecting the composition to elevated temperature and pressure until the temperature becomes uniform through the mass, and suddenly releasing the pressure. The sudden release of the pressure "permits rapid vaporization of the solvent and drying of the material into a mass of low specific gravity". (Compare Can. P.'s 430 326-7 to Clifford I. Haney and Mervin E. Martin, assignors to Camille Dreyfus.)

III, 1a. Cellulose derivatives

CELLULOSE DERIVATIVES. Treatment of cellulose. Robert B. Darling (to Hercules Powder Co.). USP 2 382 399, August 14, 1945. Before esterifying purified cellulose to form "an ester of a lower fatty acid of improved heat stability and haze characteristic", the cellulose is treated with a processing water until it contains 0.001 to 0.03% by weight of magnesium. The processing water is prepared by dissolving in a water containing 0 to 100 ppm. of dissolved calcium and less than 5 ppm. dissolved magnesium, enough magnesium compound to form a solution containing 5 to 100 ppm. of dissolved magnesium and at least one-third as much magnesium as calcium.

CELLULOSE ETHERS. Stabilizing cellulose ethers. Shailer L. Bass, Lawrence A. Rauner, and Paul H. Lipke, Jr. (to The Dow Chemical Co., Inc.). USP 2 383 361, August 21, 1945. Cellulose ether compositions soluble in organic solvents are heat stablized and made insoluble by dispersing in them compounds of the general formula:

$$X\text{–}\varphi\text{–}NH\text{–}\varphi\text{–}Y,$$

where *X* is either hydrogen, or a hydroxyl or an alkoxyl radical with a straight chain of 1 to 4 carbon atoms; and *Y* is an -OH, arylamino, arylsulfonylamino, or alkoxyl radical having a straight chain of 1 to 4 carbon atoms. The mixture is heated following the dispersion of the stabilizer. Specific claim is made to 4-phenylamino-diphenylamine and 4,4'-dimethoxydiphenylamine; and the compositions so made are claimed also. Tables in the specification show the effect of the nature of the stabilizer and the time and temperature of heating on the flexibility and solubility in common solvents of benzyl, propyl, methyl, and ethyl cellulose, with or without plasticizer. The notched and un-notched impact resistance and tensile strength, before and after heating, are tabulated for stabilized and unstablized, plasticized ethyl cellulose.

CELLULOSE PLASTIC. Cellulose ether com-

position. Melvin J. Hunter and Earle L. Kropscott (to The Dow Chemical Co., Inc.). USP 2 385 359, September 25, 1945. A mouldable thermoplastic is made of ethyl cellulose plasticized with a compatible amount greater than 8% of an alkyl ester of a hydroxy- or an acyloxystearic acid. Methyl 12-hydroxystearate, butyl 12-hydroxystearate, and 2-ethylhexyl 12-hydroxystearate are claimed specifically. In several claims the ethoxy content of the ethyl cellulose is specified to be between 44 and 49.5%. The plastics can be extruded, injection molded, or dissolved in toluene-ethanol mixtures and used for coating, e. g. automobile-ignition cable. The final products are highly flexible and have a high impact strength, even at -40°C. Five formulas are given, including one of a cable-coating compound. Tables show the compatibility of nine plasticizers with ethyl cellulose; the dimensional stability of ethyl cellulose plasticized with 2-ethylhexyl 12-hydroxystearate compared with that of cellulose acetate, cellulose acetate butyrate, and methyl methacrylate; the impact strength at 10° intervals from 20 to -70°C. of three plasticized ethyl celluloses; and the flexibility of ethyl cellulose plasticized with various proportions of the compounds claimed in this patent and with di(o-xenyl)phenyl phosphate and tricresyl phosphate.

DIELECTRIC MATERIAL. Frank M. Clark (to General Electric Co., Inc.). USP 2 386 659, October 9, 1945. Sheets of dielectric material for use in electric capacitors consist of cellulose ester having dispersed in it 5-15% by weight of magnesium oxide. The sheet material has a dielectric constant of about 7 to 9, a dielectric strength of about 2060 volts per mil, and a power factor of about 0.5%, which is not unfavorably affected by a rise in temperature from 30 to 100°C. The sheets are 0.0001 to 0.0003 in. thick.

OPTICAL MATERIAL. Materials impermeable to ultraviolet light. William Horback (to Celanese Corp. of America). USP 2 386 855, October 16, 1945. Articles transparent to visible light, that are opaque to ultraviolet and exhibit a bluish fluorescence under it, consist essentially of a plastic cellulose derivative having incorporated with it from 0.10 to 5% by weight of fluoranthene or its alkyl and aryl "substitution derivatives."

COATING COMPOSITION. Hot-melt coating composition. Martin Salo and Harold F. Vivian (to Eastman Kodak Co., Inc.). USP 2 387 773-4, October 30, 1945. A method of forming a non-blocking, hot-melt coating on paper comprises applying to at least one surface a thin layer of the following composition in a molten, fully fluid condition: cellulose acetate butyrate and 25 to 100%, based on the weight of the cellulose ester, of a mixture of dibutyl sebacate and butyl stearate (USP 2 387 773) or di-2-ethyl hexyl phthalate and butyl stearate (USP 2 387 774) the minor component of which mixture comprises at least 20%. The cellulose acetate butyrate has a butyryl content of 42-50%, not more than two hydroxyl groups per 24

cellulose carbon atoms, a melting point less than 200°C, a char point of at least 260°, and a cuprammonium viscosity of not more than 10 and an acetone viscosity of 5-200 centipoises. This method produces a smooth, impermeable coating on the paper.

RELEASE AGENT. Release agent for film-casting and embossing operations. Harry L. Boulton and Albert B. Savage (to The Dow Chemical Co., Inc.). USP 2 388 206, October 30, 1945. A cellulose-ether composition for use in the manufacture of molded and embossed articles, which is released easily from the forming member, includes ethyl cellulose, a plasticizer for the ethyl cellulose, and, as a release agent, 0.5 to 12% by weight of a polyglycol having a molecular weight between 2000 and 5000. Polyethyleneglycol phthalate and polyethyleneglycol maleate are claimed specifically.

CELLULOSE ESTERS. Stable cellulose organic esters. British Celanese Ltd. Brit. P. 567 893. In the manufacture of organic esters of cellulose by esterifying cellulose in the presence of an inorganic acid esterification catalyst and a solvent for the cellulose ester, the acid is eliminated and replaced by "an organo-mineral acid" before the ester is ripened. The ripened product is "stable" for the preparation of yarns and for molded articles.

CELLULAR MATERIAL. Clifford I. Haney and Mervin E. Martin (to Camille Dreyfus). Can. P.'s 430 326-7, September 25, 1945. Cellular articles of low density are made by mixing particles of a cellulose derivative, e. g. cellulose acetate, and a liquid, which, under the conditions used "has at least a swelling action" on the cellulose derivative, e. g. ethyl alcohol; heating the mixture to a temperature at which the liquid would be vaporized under normal conditions under a pressure of at least 1000 lb. per sq. in. (6000 lb. are claimed for the cellulose acetate-ethyl alcohol mixture); and releasing the pressure quickly. Between 1 and 40% of liquid is employed. (Compare Can. P. 430 329 to William Ivan Taylor, assignor to Henry Dreyfus.) According to Can. P. 430 327, the resulting material is subjected to the action of a saponifying agent, e. g. 1 *N* alcoholic potassium hydroxide, which is removed after reaction has taken place by boiling the material in water and then washing it until the washings are neutral. The products are porous and absorbent.

CELLULAR MATERIAL. Insulation material. Clifford I. Haney and Mervin E. Martin (to Camille Dreyfus). Can. P. 430 328, September 25, 1945. Insulating materials are prepared by "associating" a cellular material of low density, based on a cellulose derivative, with a partially polymerized resin; and subjecting the treated particles to the action of elevated temperature and slight pressure to cause further polymerization in situ and thus bind the discrete particles into a firm, coherent mass.

CELLULOSE ESTERS. Cellulose ester production. Henry Dreyfus. Can. P. 430 468, October 9, 1945. Lower fatty-acid esters of cellulose containing an acetyl radical are made by pre-treating

cellulose with a lower fatty acid containing a small proportion of mineral acid; esterifying the pretreated cellulose in a liquid medium that dissolves the ester produced, and that contains at least five times as much by weight of lower fatty-acid anhydride as there is cellulose and not more than 5% of the weight of the cellulose of sulfuric acid; precipitating the cellulose ester; and ripening it in solution in an organic solvent. At least a part of the lower fatty-acid anhydride is acetic anhydride.

CELLULOSE DERIVATIVES. Cellulosic material processing. Clifford I. Haney and Mervin E. Martin (to Camille Dreyfus). Can. P. 430 706, October 16, 1945. In manufacturing cellulose acetate, the fibrous cellulosic material is pretreated with a mixture of acetic acid, a small amount of sulfuric acid, and 1 to 5% by weight of the cellulose of formic acid: the pretreated material is mixed with 77 to 130% of its weight of acetic anhydride, diluted with not more than an equal amount of acetic acid, to partially acetylate the material without destroying its fibrous form; and continuing the acetylation by mixing the partially acetylated material with a mixture of acetic anhydride and sulfuric acid.

INSULATION. Heat insulating material. Clifford I. Haney and Mervin E. Martin (to Camille Dreyfus). Can. P. 430 707, October 16, 1945. Heat-insulation is produced by mixing discrete particles of regenerated cellulose processed to have a cellular structure with a binding agent, and subjecting the resulting mixture to a shaping operation.

CELLULOSE ACETATE. Harold W. Stiegler (to American Cyanamid Co., Inc.). Can. P. 430 759, October 23, 1945. Cellulose acetate threads, sheets, or fabrics are improved by coating them with a solution made by dissolving cellulose acetate and a film-forming substance (a protein or an acid-curing aminoplast resin) in cyanamide or a lower dialkyl cyanamide.

CELLODEXTRIN ACETATE. Cellodextrin derivative. George W. Seymour (to Camille Dreyfus). Can. P. 430 853, October 23, 1945. A process for making cellodextrin acetate comprises treating cellulose at a maximum temperature of 30°C. with acetic anhydride in a medium for dissolving the acetate produced containing 20 to 30% on the weight of the cellulose of sulfuric acid as a catalyst, and continuing the treatment for 36 to 56 hours. The cellodextrin acetate formed has a molecular weight of about 3000 to 3800 as calculated from the iodine number. It is precipitated from solution with methyl alcohol and is washed to remove the alcohol.

CELLULOSE SHEET. Cellulose sheet manufacture. Emil Czapek (to Guaranty Trust Co. of New York City). Can. P. 430 920, October 30, 1945. Strips and the like are prepared from viscose and similar cellulose solutions by pouring a viscous layer directly onto a pouring base without any intervening unsupported free space, immersing the layer so supported into a coagulating fluid, freeing the layer from the base when the coagulating fluid

begins to penetrate the layer to the base, supplying fresh coagulating fluid to the inner surface of the layer so freed, and returning the layer so freed to the pouring base and retaining the layer on it until effectively coagulated throughout.

III, 1b. Polymer resins; natural resins

SILICONES. New Dow Corning plant produces silicones at Midland. W. R. Collings, Dow Corning Corp. *Chem. Eng. News 23,* 1616-9 (September 25, 1945). A description of the various uses to which silicones were put during the war includes a brief account of the new silicone plant of the Dow Corning Co. at Midland, Michigan. This account is illustrated with pictures of the key men concerned with the development of silicones for Dow Corning, of devices for testing the service life of silicone-electric insulation, and of distilling towers for the separation of chlorosilanes. A flow chart of the plant is given also. Silicones are used as moisture-repellents, electric insulation, laminating resins, anti-foaming agents for diesel lubricants, adhesives on Fiberglas and other tapes, greases, and a base for an aluminum paint for covering hot surfaces.

III, 1c. Condensation polymer resins

POLYMER TREATMENT. William W. Prichard (to E. I. du Pont de Nemours & Co., Inc.). USP 2 387 530, October 23, 1945. The properties of linear, active-hydrogen-containing, macromolecular polymers "containing recurring intralinear carbonamide and carboxylic acid ester groups" are modified by reacting the polymers at a temperature between 20 and 250°C., but below the degradation temperature of the polyesteramide, with the cylic anhydride of an organic dicarboxylic acid having an acyclic chain of at least four carbon atoms between the carboxyl groups.

POLYAMIDES. Carl J. Frosch (to Bell Telephone Laboratories, Inc.). USP 2 388 035, October 30, 1945. Claim is made to a linear polyamide "identical with the polyamide prepared by the condensation of a polymtheylene dicarboxylic acid and a mixture of a diprimary polymethylene diamine, a polymethylene diamine having an alkyl substituent on one of its amino groups, the other amino group being unsubstituted, and a polymethylene diamine having an alkyl substituent on each of its amino groups, said alkyl substituent containing between one and six carbon atoms, said substituted amino groups making up between about 5 per cent and about 60 per cent of the total amino groups present, the proportions of each of said diamines in said diamine mixture being that produced by adding as much diprimary polymethylene diamine, as is necessary to produce the proper proportion of primary amino groups, to a diamine mixture containing not more than about 60 per cent alkyl substituted amino groups and having its diprimary, primary-secondary and disecondary diamines distributed in approximately the proportion A^2, 2AB and B^2, respectively,

where A is the proportion of primary amino groups and B is the proportion of substituted amino groups."

III, 1d. Rubbers and rubber derivatives

IMPREGNATING GEL. Fibrous material and saturant. Leander Herbert Hills (to The Vellumoid Co.). Can. P. 430 306, September 25, 1945. Claim is made to the product prepared by impregnating a porous foundation with a gel produced by driving off the solvent from the product resulting from pouring bodied dehydrated castor oil into a solution of Tornesit (a chlorinated rubber) in a solvent including "a compatibilizing agent" (an ester or a ketone), in which gel the amount of oil is approximately seven times the amount of Tornesit. If desired the rubber may contain an antioxidant. Butyl acetate is named once as the "compatibilizing agent". Claim also is made to emulsions of the type from which the gel is formed.

IMPREGNATED MATERIAL. Impregnated fibrous material. Leander Herbert Hills (to The Vellumoid Co.). Can. P. 430 307, September 25, 1945. "An article of manufacture" comprises a fibrous sheet of base material impregnated with a gel made from a bodied drying oil and rubber chloride, in which only 1/7th as much rubber chloride as drying oil is present. The article has a high density and crushing resistance "due to the impregnation having been accomplished in the absence of a solvent for said oil and rubber chloride."

III, 2. Adhesives; gums; starches

SIZING. Some facts on animal glue as applied to textiles. National Association of Glue Manufacturers, Inc. *Textile Colorist & Converter 67,* 868-9, 889, 892 (July 1945). Animal gelatine and glue sizes are used widely to size continuous filament rayon-warp yarns. Different grades are required for acetate and viscose rayons because of the different manner in which they take up water. Spun rayons cannot be sized with straight glue, although a combination glue-tapioca starch is useful. The glue-starch sizes are made easily by dissolving the starch in the glue at 190°F. They have the distinct advantage of washing out of the fabric very readily at temperatures in the same range.

STARCH SIZE. Starch size improved by synthetic gum. Warp sizing, finishing and other operations aided by Rhotex size. Anon. *Rohm & Haas Reptr. 3,* No. 3, 4-5 (August 1945). Rhotex Size is a synthetic gum derived from a polyacrylic resin. It is used in warp sizes, textile finishes, and printing pastes containing starch, to which it imparts toughness, flexibility, and ability to go on smoothly. Yarns sized with starch containing Rhotex Size are less affected by changes in humidity than those sized with ordinary starch pastes. Uniform, smooth, sharp, and level prints are obtained from starch-printing pastes containing Rhotex Size. The Size is completely soluble in water, and on drying it forms a tough film, which redissolves readily. Pictures illustrating the article show the cooking of starch on a laboratory scale and a yarn slasher.

CONVERTED STARCH. Production of starch conversion sirups. Richard Nicholas Monte (to Corn Products Refining Co., Inc.). USP 2 383 914, August 28, 1945. Claim is made to an improvement in the production of starch-conversion sirups by acid hydrolysis of aqueous starch suspensions at superatmospheric steam pressure. The improvement consists in contacting the suspension undergoing treatment with "an effective amount, not less than about 0.5% by weight based on starch dry substance, of activated carbon of vegetable origin, and arresting the conversion when the conversion liquor has attained a D. E. of about 56% to about 60%, said activated carbon being in finely divided form."

SIZE. Treatment of textile materials. George W. Seymour and Dustin Y. Miller (to Celanese Corp. of America). USP 2 385 110, September 18, 1945. An aqueous composition for sizing rayon yarns, prepared by the saponification of stretched yarns having a basis of an organic ester of cellulose, comprises 0.2 to 5.0% by weight of polymerized ethylene oxide, 0.1 to 1.0% by weight of a wetting or penetrating agent, and 1 to 10% by weight of one of the following: polymerized methacrylic acid; salts of polymethacrylic acid; interpolymers of methacrylic acid with an acrylic acid or polyacrylic acid, and interpolymers of methacrylic acid with at most 10% of styrene, vinyl acetate, and methyl methacrylate.

STARCH PRODUCT. George B. Fowler and Donald K. Pattilloch (Pattilloch assignor to Chemical Development, Inc.). USP 2 385 438, September 25, 1945. A process of making a tough starch gel precipitable by aluminum sulfate consists in suspending about 40 parts of starch in about 480 parts of water containing about 50 parts by weight of a water-dispersible urea-formaldehyde condensation product, dissolving about 28 parts by weight of sodium metasilicate in 120 parts of water, and adding the latter solution rapidly to the former, with violent agitation.

DRY SIZE. Fred L. Chappell, Jr. (to Hercules Powder Co., Inc.). USP 2 386 033, October 2, 1945. A dry rosin-size composition for use in the preparation of aqueous sizing emulsions containing large amounts of free rosin comprises substantially neutral, dry, alkali-metal-saponified rosin size, and a solid organic acid anhydride present in amounts insufficient to lower the pH of the mixture dispersed in aqueous media below 6.0.

SIZE. Textile sizing compositions and process of making them. John B. Rust (to Ellis-Foster Co., Inc.). USP 2 386 144, October 2, 1945. A yarn-sizing composition of low viscosity and capable of (a) drying on textile yarn to prevent curling and (b) removal by scouring, consists essentially of a 0.1 to 10% solution in dilute aqueous ammonia of

the ammonia-soluble reaction product or one to two parts of a hexahydric alcohol (mannitol or sorbitol), and two to one parts of an unsaturated dicarboxylic acid (maleic acid, maleic anhydride, or fumaric acid).

STARCH MODIFICATION. Modification of starch. Thomas John Schoch (to Corn Products Refining Co., Inc.). USP 2 386 509, October 9, 1945. Starch is modified by heating it in an aqueous solution of not more than 15% by volume of a saturated aliphatic monohydric alcohol having one to six carbon atoms. The alcohol reduces the gelatinization temperature. The process works, as is shown by examples, on corn, tapioca, and wheat starch. Ethyl, butyl, and n-amyl alcohols are claimed specifically.

SIZE. Textile material sizing. Walter Garner, Frank Gullon Holroyd, and Ronald Gill. Can. P. 429 887, September 11, 1945. A sizing material for nylon comprises casein, borax, ceresin wax, mineral oil, soap-forming fatty acid, an anti-static compound, antiseptic, and water.

ADHESIVE COMPOSITION. Adolph F. Wendler (to Canadian Industries, Ltd.). Can. P. 430 776, October 23, 1945. A method of securing adhesion between sheets of "an organic solvent soluble cellulose substitution derivative material," whose surfaces are of identical compositions, comprises applying to at least one of the surfaces an amide of the formula

$$R\text{-}C\text{-}N(Z)Y$$

where R and Y represent hydrogen or "aliphatic type" radicals, Z represents an "aliphatic type" radical, and Y and Z "may represent terminal carbon atoms of a single aliphatic type radical." The amide is soluble in water to the extent of 5% at 20°C. After application of the amide, the surfaces of the sheets are pressed together to dry and bond them.

III, 3. Surface-active compounds, textile assistants

DETERGENT COMPOSITION. Truman E. De Villiers (to Cities Service Oil Co., Inc.). USP 2 383 114, August 21, 1945. A detergent mixture comprises approximately 30% o-dichlorobenzene, 20% ethylene glycol monobutyl ether, 15% glycerine, 7% water, and the remainder essentially an ethanolamine oleate soap.

DETERGENTS. Acid triphosphates as builders for alkyl sulphates and other soapless detergents. Oscar T. Quimby (to The Proctor & Gamble Co., Inc.). USP 2 383 502, August 28, 1945. A new washing composition "of improved washing efficiency" is a mixture of an anion-active, soapless, synthetic, surface-active organic compound, suitable as a washing agent in aqueous solution, and an alkali metal acid triphosphate having the general average formula

$$M_xH_{5-x}P_3O_{10},$$

where M is an alkali metal and x has any value be-

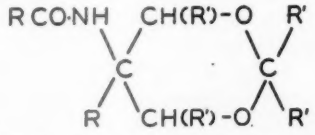
tween 5 and 3, and having a pH value in dilute aqueous solution less than 9.5 but not less than 5.

DETERGENT COMPOSITION. Nathaniel Beverley Tucker (to The Proctor & Gamble Co., Inc.). USP 2 383 525-6, August 28, 1945. A cleansing composition comprises essentially a mixture of a water-soluble salt of an organic sulfonic acid or a water-soluble salt of an aliphatic sulfuric acid ester with a smaller amount by weight (but sufficient to enhance the detergent power) of a N-acyl morpholine having 12 to 14 carbon atoms in the acyl radical (2 383 525) or an aliphatic nitrile having 12 to 14 carbon atoms (2 383 526).

DETERGENT COMPOSITION. Albert S. Richardson (to The Proctor & Gamble Co., Inc.). USP 2 383 737, August 28, 1945. A cleansing composition comprises essentially a water-soluble salt of an organic sulfonic acid, an alkyl sulfuric acid, or a sulfuric acid ester of a polyhydric alcohol incompletely esterified with a fatty acid of high molecular weight, mixed with a smaller amount by weight of an ethanolamide or a glycerolamide of a fatty acid containing 12 to 14 carbon atoms.

DETERGENT COMPOSITION. Albert S. Richardson and Walter H. McAllister (to The Proctor & Gamble Co., Inc.). USP 2 383 738, August 28, 1945. A cleansing and laundering composition comprises essentially a mixture of a water-soluble salt of an organic sulfonic acid or of an aliphatic sulfuric acid ester, and a smaller amount by weight (but enough to enhance its detergency) of an amide of the formula R.CO.NR′R″, where R.CO is an acyl radical of a fatty acid containing 10 to 14 carbon atoms, R′ and R″ are hydrogen and alkyl radicals containing 1 to 4 carbon atoms, and the sum of the carbon atoms in R′ and R″ is less than 5.

DETERGENT COMPOSITION. Nathaniel Beverley Tucker (to The Proctor & Gamble Co., Inc.). USP 2 383 739, August 28, 1945. A cleansing and laundering composition comprises essentially a mixture of a water-soluble salt of "an organic sulfuric reaction product having . . . a . . . sulfonic acid . . . [or a] sulfuric acid ester" radical, with a smaller amount (but enough to enhance the already pronounced detergency) by weight of an amide of the general formula



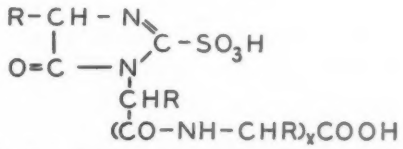
where RCO is the acyl radical of a fatty acid containing 10 to 14 carbon atoms; R is hydrogen, methyl, methylol or ethyl; and R′ is hydrogen or methyl.

DETERGENT COMPOSITION. Nathaniel Beverley Tucker (to The Proctor & Gamble Co., Inc.). USP 2 383 740, August 28, 1945. A cleansing and laundering composition comprises es-

sentially a mixture of a water-soluble salt of "an organic sulfuric reaction product having . . . a . . . sulfonic acid . . . [or a] sulfuric acid ester" radical, and an amide derived from a water-soluble aliphatic hydroxy carboxylic acid and an aliphatic primary amine containing 10 to 14 carbon atoms in the aliphatic radical. The amount of amide added is less by weight than the weight of the water-soluble salt, but is sufficient to enhance the already pronounced detergency of the latter.

TEXTILE OIL. Manufacture and use of new amine salts. Edward Boaden Thomas (to Celanese Corp. of America). USP 2 384 053, September 4, 1945. Textile fibers are dressed with a composition comprising a lubricating oil (mineral lubricating oil alone or mixed with cocoanut oil and cyclohexanol) and a salt of diethyl-ethylene-diamine with an acid sulfate of an aliphatic alcohol containing at least 12 carbon atoms. The salts are made by suspending the sodium salt of the acid sulfate in about 10 times its weight of dry methanol, and adding a 15% excess of diethylethylenediamine and the theoretical amount of sulfuric acid; refluxing the mixture for a short time; cooling; filtering out sodium sulfate; and evaporating the solution to dryness. These salts are said to be "of value as dispersing, washing and wetting agents, and for . . . reducing the tendency of textiles of low electrical conductivity . . . to acquire and retain electric charges."

TEXTILE AGENTS. Sulphonic acids of the 5-oxo imidazoline series. Oskar Huppert. USP 2 384 837, September 18, 1945. Compounds formed by oxidizing protein thiohydantoin disulfides with hydrogen peroxide are claimed. They have the general formula



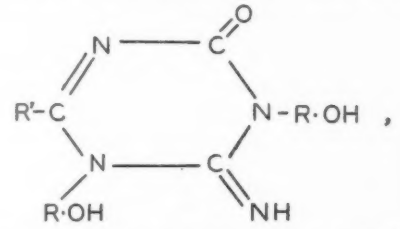
in which *R* is hydrogen, or the aliphatic, aliphatic-aromatic, and heterocyclic radicals found in alpha-amino acids; and *x* is a number between 0 and 287. The salts and esters are claimed also as well as protein fibers containing them and the sulfonic acids. The compounds have a great affinity for protein fibers, which they render strong, lustrous, elastic, and resistant to swelling. They can be used as detergents, protective colloids, emulsifying agents, dye-assistants, etc. Fibers may either be impregnated with the agents or the agents may be generated in situ by treating with hydrogen peroxide fibers previously treated with the parent disulfide.

TREATING TEXTILES. Treatment of textile materials. George W. Seymour and Walter Brooks (to Celanese Corp. of America). USP 2 385 423, September 25, 1945. A textile oil for cellulose derivatives comprises a mineral oil, an oxidized vegetable oil (oxidized peanut oil is claimed specifically), dibutyl or diamyl phenols, acetylated

castor oil, oleic acid, triethanolamine, and oleyl alcohol. The mineral oil has a viscosity of about 50 seconds Saybolt Universal at 100°F. Nine formulas are given in the examples included in the specification. Treated yarns are described as: being flexible and pliable, even after long storage, capable of being knit or woven under conditions too severe for yarns treated with other textile oils, and ideal for the production of crepe yarns; producing non-wrinkling cloth less subject to shrinkage than cloth made from conventionally treated yarns; and dyeing rapidly.

DETERGENT. Detergent composition and method of making same. Lawrence H. Flett (to Allied Chemical & Dye Corp.). USP 2 387 572, October 16, 1945. An improved detergent composition comprises alkyl aryl sulfonates, the alkyl side chains of which are derived from a kerosene fraction at least 80% of which boils between 180 and 300°C., mixed with 40 to 65%, by weight of a water-soluble salt having as its inorganic caution, sulfate, sulfite, thiosulfate, chloride, dihydrogen phosphate, borate, or acetate.

SURFACE-ACTIVE AGENTS. Monoalkylol cyanamide condensation product. Walter P. Ericks (to American Cyanamid Co.). Can. P. 428, 489, July 3, 1945. Compounds of the general formula



where R is an alkyl or alkoxy group and R′ is an alkyl or an aryl group, formed by the reaction of an aliphatic carboxylic acid and a monomeric or dimeric monoalkoxyalkyol cyanamide, are claimed as surface-active agents.

SURFACE-ACTIVE AGENTS. Monoalkylol cyanamide condensation product. Robert F. Uncles and Kerwin K. Kurtz (to American Cyanamid Co.). Can. P. 428 490, July 3, 1945. Surface-active agents are made by condensing an aliphatic monocarboxylic acid containing 10 to 16 carbon atoms with a substantially unpolymerized monoalkylol cyanamide in an aqueous solution containing 20 to 60% of it by weight by heating the solution between 80 and 100°C.

DETERGENT. Detergent preparing process. William J. Sweeney (to Standard Oil Development Co.). Can. P. 430 059, September 11, 1945. A detergent and wetting agent comprises a soap of a strong mineral-acid derivative of a cracked paraffin of more than six carbon atoms. The process of making the derivative starting from petrolatum is claimed too.

DETERGENT. Coleman Reeves Caryl (to

American Cyanamid Co., Inc.). Can. P. 430 758, October 23, 1945. A detergent composition comprises 0.5 to 3 parts by weight of the condensation product of an aliphatic monocarboxylic acid having 10 to 18 carbon atoms with a monoalkylol cyanamide, 5 to 10 parts of the sulfosuccinic ester of at least one aliphatic alcohol having 6 to 10 carbon atoms, and 10 to 50 parts of a water-soluble salt of pyrophosphoric acid. Cyanamino ethyl laurate and sodium dioctyl sulfosuccinate are claimed specifically.

ANTI-STATIC COMPOSITION. Anti-static coating for films. Gilbert Wesley Brant (to Canadian Industries, Ltd.). Can. P. 430 783, October 23, 1945. An anti-static coating for films, sheets and pellicles "of non-hygroscopic, electrically non-conducting, film forming substances" comprises essentially 0.5 to about 3% by weight of starch, 0.03 to 0.2% of a hygroscopic electrolyte, 0.2 to 1.5% of a wetting agent, and the balance water. Potassium acetate and lithium chloride are the electrolytes claimed specifically.

IV. FIBER TO YARN

CANADIAN YARN IMPORTS. Synthetic yarn and fibre imports during the war years. Anon. *Can. Textile J. 62,* No. 18, 24 (September 7, 1945). Canadian imports from the United Kingdom, the United States, and others of single and thrown acetate and viscose rayon yarns, nylon yarns, tire cord, and staple fibers are tabulated by years for the period 1939-44. The total imports increased from about 2,900,000 lb. in 1939 to about 6,900,000 lb. in 1944. The increase in imports of acetate filament is stated to be particularly striking.

CLEANING AND OILING. Cleaners and oilers can be assigned schedules. F. H. Gunther and Marcus Gross. *Textile World 95,* No. 6, 135, 137 (June 1945). In spinning departments the cleaning and oiling is none the less important for being done by semi-skilled and unskilled operators. These operators should have regular schedules. A sample of such a schedule is shown and the method of constructing a fair schedule is explained.

HANDLING BLENDS. More knowledge needed for handling blends. Anon. *Am. Wool Cotton Reptr. 59,* No. 38, 11-12, 43 (September 20, 1945). Artificial and synthetic fibers and the blended fabrics made from them are "often undeservedly criticized" for things caused by improper handling on machinery designed for handling natural fibers. The picking operation is usually too severe, sufficient attention has not been paid to the moisture content of the fibers to be blended, slivers are too heavy, and much machinery in use is obsolete. Such things as the lengths and diameters of fibers that can be blended, and the proper size of clothing wire, licker-in speed, and types of drawing rolls and roll covering, have yet to be settled. Manufacturers are urged to examine their yarns for broken fibers, neps, partial cuts, etc.; and to try to determine the causes.

SWISS MACHINERY. Modern Swiss textile machinery. "Special Correspondent." *Textile Recorder 63,* No. 749, 48-50 (August 1945). Novel features of the Swiss textile-machinery manufacturers Schweiter Machine Works, Ltd., Sam Vollenveider, Grob & Co., Ltd., and Staubli Bros., Ltd., are pointed out in an article announcing the plans of these companies to advertize and sell their products jointly under the name "Four of Horgen." A little of the past histories of the companies is included. A table lists the maximum number of flat steel and steel wire healds per shaft and per centimeter for different types of eyelets.

SPINNING ROLL COVER. Henry M. Bacon (to The Dayton Rubber Manufacturing Co., Inc.). USP 2 386 583, October 9, 1945. Cots for spinning and card rolls have a pitted surface consisting of "a vulcanized body comprising acrylic nitrile and butadiene copolymer, and fine particles of rubber substance of dissimilar relative hardness dispersed therein."

TENSION CONTROL. Tension control mechanism. Conard J. Arrington (to United States Rubber Co., Inc.). USP 2 387 869, October 30, 1945. A tension-control mechanism comprises, in combination, "a source of strand supply, a pair of front rolls having a strand feeding nip, a pair of back rolls having a strand feeding nip and an adjacent clearance space between the roll surfaces, means for driving the front rolls slightly faster than the back rolls, and a fixed guide constructed and arranged to direct a taut strand to the nip of the back rolls to be advanced thereby and a sagging slack strand to the clearance space between these rolls so that it will be advanced by the faster front rolls."

IV, 1. Preparation for spinning

COMBING ECONOMICS. Cotton combing quality not consistent with cost. E. H. Helliwell and H. J. Ball. *Textile World 95,* No. 6, 129, 131, 204, 206, 208 (June 1945). Although American made cotton combers "meet the demands for good quality, lower waste extraction, increased production, and decreased labor cost," "two very evident improvements [are] yet to be made. One is a further reduction in the amount of good fiber in the extracted noil . . . The other improvement . . . is a reduction in preparatory processes between the card and comber." Information was collected from eight mills making yarns ranging from 12 to 116s yarns on the labor costs of each step used in the preparation. This information is tabulated and discussed. The following different methods are used for lap preparation: (a) card sliver to sliver lapper to comber; (b) card sliver to one-process drawing to sliver lapper to comber; (c) card sliver to sliver lapper to ribbon lapper to comber. The costs vary much more than the quality of the yarns. Fiber arrays are necessary for controlling combing operations. An analysis of a typical fiber array is included.

COTTON SPINNING. Cotton spinning. II.

Hopper bale breaker and hopper feeder. James H. Dawson. *Indian Textile J. 55,* 713-16 (July 1945). The mixing of cotton removed from bales in hopper-bale breakers and hopper feeders is described with the help of photographs and a diagram.

REVOLVING CLEARER. Revolving clearer improves efficiency and quality. C. Mallard Bowden, Southern Editor, *Textile World. Textile World 95,* No. 6, 147 (June 1945). A simply-constructed revolving clearer has been in operation "over a period of time at Riverside & Dan River Cotton Mills, Danville, Va." It reduces "eyebrowing," saves the operator's time in picking top clearers, and runs without attention for times varying from 8 hours for controlled-draft drawing to 288 hr. for speeders. It consists of a steel roller at the back and two wooden rollers, one over the front-roll and the other occupying "an intermediate position". The apron "receives a traction-driven motion between the surface of the back roll and the steel clearer roll which turns the . . . apron". The front and intermediate wooden rolls provide no driving power. The apron itself moves somewhat more slowly than the surface speed of the back roll. "At this speed the apron gives the fast-moving middle and front top rolls a thorough cleaning . . . In addition, it moves all short waste, lint, and dust from the top rolls and forms this waste into a tight felted mass. . ." At present the clearer is applied to 1500 drawing deliveries and 20,000 roving spindles. A patent has been applied for.

WORSTED TOPS. Manufacture of worsted tops at Arlington Mills. Anon. *Cotton (U. S.) 109,* No. 7, 91-4 (July 1945). A description of the preparation of worsted tops from fleece in the Arlington Mills, Lawrence, Mass., is illustrated with photographs of the various stages of carding, a battery of French combs, the final gilling stage of French combing, cleansing of card sliver in a backwasher, and a Noble comb. Arlington Mills are commission combers. Their card room contains 172 worsted cards of different types to handle all kinds of wool.

WOOL COMBER. Wool-combing machine. Hachig Sarkisian. USP 2 384 344, September 4, 1945. A mounting for plows for a wool comber having a rotary pin-carrying table with plows extending into the spaces between the rows of pins comprises: a stationary spindle, a set of plows with hubs borne by the plows through which the spindle extends and upon which spindle the hubs will turn freely without allowing the plows to tilt; and means for maintaining the hubs on the spindle in the position to which they have been moved for locating the plows. The hubs correspond in length with the spaces between the rows of teeth so that the plows will be positioned properly within the spaces between the rows of teeth into which they extend when the hubs are moved along the spindle and are brought into abutment with each other and held

there. The means for holding the hubs in the determinate position include "an element fixed to the spindle against which the inner end of the abutting hubs has abutment and an adjustable member affixed to . . . [the] spindle against which the outer end of the abutting hubs has abutment."

COTTON CLEANER. Lucien I. McDaniel and Frank E. Deems (to Continental Gin Co., Inc.). USP 2 384 383, September 4, 1945. Apparatus for cleaning cotton subjects the cotton to a beating action by providing upper and lower rows of cylinders having agitating and cleaning elements on them. The apparatus is designed so that the cotton "is carried over the upper series of cylinders and then over the lower series of cylinders, to be there acted upon by both cylinders, the cylinders being provided with agitating and cleaning elements so spaced as to form screens". Means are provided for feeding the cotton and for driving the cylinders.

DRAWING MACHINERY. Knockoff motion for drawing machines. Erwin M. Dunn and John C. Baucom. USP 2 384 417, September 4, 1945. A knock-off motion for drawing rolls consists of an oscillating element, means controlling the power to operate the rolls, a knock-off lever, means on the oscillating element engageable by the lever to prevent operation of the oscillating element when the lever is unrestrained to stop operation of the rolls, and control means normally maintaining the knock-off lever disengaged from the second means. This control means consists of a control member subject to displacement by movement of one of the rolls and a pivotal mounting for the knock-off lever, comprising a pivot element, a screw engaging the frame of the machine, and fastening means coacting with the screw on opposite sides of that part of the frame on which the screw is mounted.

NIPPER. Comber nipper system. Frank L. Crockett (to Whitin Machine Works, Inc.). USP 2 384 603, September 11, 1945. An improved nipper system for Heilmann-type cotton combers, especially those used on short-fiber cotton lap, has nipper jaws comprising "a cushionplate and a nipper knife coacting therewith to nip the cotton between three angularly related substantially flat pressure faces on the plate, said faces being in planes substantially perpendicular to the direction of the knife movement and a relief groove in the knife between two of said faces".

TENSION DEVICE. Walter O. Sjogren. USP 2 384 650, September 11, 1945. A device for tensioning strip material, such as card clothing as it is wound helically on a carding roll, comprises first and second tension members about each of which the strip material is drawn, means to apply friction to the strip material as it approaches the first tension member, and means to measure and indicate the tension on the strip material as it is drawn from the second tension member. Both tension members

have "adjacent cylindrical and frustro-conical surface portions with which the strip material engages".

CLEANING MACHINE. Drawing roll cleaning machine. Harry G. Steinmetz (to E. V. Hadley). USP 2 385 039, September 18, 1945. In a cleaning machine for spinning-machine drawing rolls, there are: a frame, a pair of rotary carrier discs having means for receiving a draw roll and supporting it during the cleaning, a belt for rotating the roll while it is being cleaned, a rotary brush engaging portions of the roll to clean it, means for tensioning the belt during the cleaning, and a motor connected to rotate the brush and move the belt. The means for tensioning the belt is connected to the brush to move the brush forward for the cleaning operation.

CONDENSER. Alfred R. Muirhead (to Lummus Cotton Gin Co., Inc.). USP 2 385 297, September 18, 1945. A condenser for separating airborne, fibrous material comprises a rotary foraminous drum; means for applying suction for creating a flow of air inwardly through the drum surface; means limiting the flow of air through the drum surface to a part of its cycle of rotation; a casing over a part of the drum through which air is permitted to flow, and having an inlet opening along one side for air-borne material to be separated; and an imperforate belt outside the drum covering the remainder of the active drum surface outside the casing to impede the flow of air through it and discharge material collected on the drum surface.

DECORTICATING FLAX. Decorticating of flax and other bast fibers. John Thomson. USP 2 385 427, September 25, 1945. A decorticating machine comprises a stationary gripper, means for opening the gripper periodically, a movable gripper spaced from the stationary gripper to provide a decorticating gap, a mechanism for reciprocating the movable gripper, means for opening the movable gripper periodically as it reciprocates, means for feeding the straw to the stationary gripper, means for withdrawing straw from the gap through the movable gripper, and means for pushing the straw across the gap when the stationary gripper is open and the movable gripper closed and for pulling decorticated straw from the gap through the movable gripper when the latter is open and the stationary gripper closed.

CONDENSING SLIVER. John Green Kershaw and Harold Fisher (to Dominion Textile Co., Ltd.). USP 2 385 448, September 25, 1945. A sliver-condensing unit for feeding sliver between the mating tongue and groove of cooperating press rolls comprises a support, and a pair of walls connected to the support and extending into the throat between the rolls. The walls extend from an entrance point up to points within the throat between the rolls and close to their surfaces. Each wall has a first edge, conforming to the face of the grooved

roll, whose inner face registers with the wall of the groove at points adjacent to the surface of the wall. Each wall has a second edge conforming to the surface of the tongued roll and meeting the first edge at a point just clearing the point of juncture of the surfaces of the tongued and grooved rolls. The groove lies between a portion of the walls. The clearance between the edges of the walls and the surfaces of the rolls are such as to confine the sliver and prevent its intermediate expansion.

VIBRATING SCREEN. Loren Glenn Symons (to Nordberg Manufacturing Co.). Can. P. 430 174, September 18, 1945. A vibrating unit for screens has a screen deck, a rotor on the deck, and means for rotating it. The rotor includes several portions eccentric to each other and "radius members in bearing relation with said eccentric portions". The "radius members" are pivoted to the deck at angles to each other.

FILLING SLIVER. Sliver can motion apparatus. Fred K. Hendrickson (to Whitin Machine Works). Can. P. 430 312, September 25, 1945. Means for feeding slivers in circular paths combined with apparatus for giving motion to associated sliver cans comprise an elongated, can-supporting table, means for locating several cans on the table, and means for imparting motion to the table. The motion-imparting means engages the table at several points spaced from each other, and gives the table as a unit a single continuous horizontal movement at a uniform speed and in a closed and accurately circular path eccentric to every can. The longitudinal axis of the table is at all times parallel to its original position.

SPINNING TRAVELLER. William Merry Camp (to The Clark Thread Co.). Can. P. 430 400, October 2, 1945. A traveller for ring spinning and twisting has a wearing surface composed essentially of nylon.

TEXTILE MANUFACTURE. Abraham Unger (to Duro Persian Manufacturing Co.). Can. P. 430 410, October 2, 1945. A textile yarn is made by passing a strand of chenille through a tube to compress its fibers, applying an adhesive to the exterior of the strand as it emerges from the tube, and wrapping "a textile" about the strand as it emerges from the tube. The textile is wrapped in a direction opposite to the twist of the chenille so that any tendency to untwist will tighten the wrapping. The step of adding adhesive is not specified in all claims.

SCREENING APPARATUS. Clifton E. Jenks (to The W. S. Tyler Co. of Canada, Ltd.). Can. P. 430 587, October 9, 1945. Screening apparatus comprises a screen frame, a screen extending across the frame, means for keeping the screen under tension, and means independent of the first means for resiliently supporting the screen. The supporting means comprises a frame within the screen frame, below the screen. In its upper portion it has re-

cesses. Strips of a resilient material are placed in the recesses and extend above them into engagement with the lower surface of the screen.

SCREENING APPARATUS. Karl Krohn (to The W. S. Tyler Co., to The W. S. Tyler Co. of Canada, Ltd.). Can. P. 430 444, October 2, 1945. A screening apparatus has a main frame, a screen body, a shaft with eccentric portions engaging bearings in the screen body for gyrating it, non-eccentric end portions mounted in bearings, housings for these latter bearings, and means for resiliently supporting the housings on the main frame.

TREATING COTTON. Treatment of cotton fibers. Elmer J. Cerny (to The B. F. Goodrich Co., Inc.). USP 2 387 058, October 16, 1945. Cotton fiber of greatly improved tensile strength, elasticity, and fatigue resistance, for use in tire cord, etc., is prepared by: forming a uniform sliver; passing the sliver between a first pair of rotating rolls to a second pair of rotating rolls distant from the first pair by less than the length of the cotton fibers in the sliver, and weighted the same as the first pair of rolls so that the ends of the individual cotton fibers in the sliver are gripped simultaneously with equal forces by the two pairs of rolls; and rotating the second pair of rolls at a peripheral speed sufficiently higher than that of the first pair to stretch the fibers without breaking them. This process does not alter the thickness of the sliver. It is preferable to wet the sliver before passing it through the rolls. The applied tension is 25-60% of the breaking strength of the cotton. According to examples given in the specification, the fatigue life is increased as much as 3700% by this treatment.

DRAFTING FIBERS. Drafting textile fibers. Elwin H. Rooney. USP 2 387 091, October 19, 1945. A prespinning, roll-frame for drafting textile fibers comprises the combination with pairs of front and intermediate rolls, a back pair having a cylindrical lower roll and a superposed upper roll bearing a number of radial points, a toothed gear on the shaft of the lower roll, and a gear on the shaft of the multi-pointed upper roll in position to mesh with the gear on the lower roll shaft. The gears differ as to the number of teeth, so that the upper roll is driven positively at a predetermined speed ratio with respect to the lower roll. In two of the claims, the gear ratio is such that "the rear or break-draft position drafts . . . [average] between greater than 2 and 6.5 and . . . break-draft, intermediate and final drafts [are] predeterminedly variable within the range of 2 to about 6.50".

DRAFTING ROLLS. Rollers of drafting mechanism for textile fibers. Joseph Noguera (to Casablancas High Draft Co., Ltd.). USP 2 387 937, October 30, 1945. A drafting mechanism for textile fibers comprises a series of pairs of upper and lower drafting rolls located in a horizontal plane, through which the fibers pass horizontally from the nip of one

pair of rolls to the nips of the other pairs in sequence, one roll of each pair of which is positively-driven and the other driven by friction; and positively-driven, idler rolls engaging directly and frictionally with the friction-driven rolls at points removed from the nips and free from the intervention of the fibers, to provide a direct friction drive.

GYRATORY SCREEN. Walter J. Parks. Can. P. 430 738, October 23, 1945. There are combined in a gyrating screen mechanism, a support, a screen frame resiliently and "pendently" supported on the support by means of members constructed and arranged to transmit forces only in a vertical direction, and a drive shaft with oppositely disposed eccentrics on it. One of the eccentrics is connected to the screen frame, and the other is connected rotatably to one end of a connecting rod, whose other end is connected to resilient means attaching the rod to the support.

IV, 2. Spinning, doubling, twisting, winding

SPINNING MACHINERY. Machines and processes. Anon. *Am. Wool Cotton Reptr. 59,* No. 38, 13, 15 (September 20, 1945) and No. 41, 55, 57 (October 11, 1945). An article lacking illustrations discusses the methods by which packages or bobbins are made on spinning frames; and the construction, parts, motions, gears, mangle wheels, shelves, troughs, bobbin holders, and thread guides of spooler and winding machines.

TWISTING DUCK YARN. Simple changes speed duck-yarn twister production. Horace L. Pratt. *Textile World 95,* No. 6, 106-7 (June 1945). Simple changes made by twisting mills to allow them to supply knotless duck yarn are described. They are: lengthening alternate spindles in each roll of the creel to allow the creel to support large packages from the winder; adoption of grooved front rolls for twisters to prevent the running of a broken end; and addition of separators to permit the use of lighter travelers and higher twisting speeds. Pictures show the altered machinery. One problem that has yet to be licked is the design of knock-off counters that do not depend on "the human element"—existing counters require a worker's setting gears or a key. The alternatives to counters adopted by most mills were: creeling yarn in the warper, and combining the necessary number of warper beams in a section beamer, or creeling the yarn directly behind the beamer. In both methods, the correct length was obtained by running the yarn down as far as possible and salvaging the remaining waste for rope or mops.

WEIGHTING DEVICE. Jacob Häfeli (to Actiengesellschaft Joh. Jacob Rieter & Cie.). USP 2 384 250, September 4, 1945. A device for weighting the press rollers of draw frames in spinning machines on both sides comprises a U-shaped section iron placed under the machine cover between

the draw frames "on both machine sides", a hose sealed at both ends and arranged in the cavity of the section iron to receive a pressure medium, and means connecting the hose with the press rollers.

YARN TWISTER. Albert E. Winslow (to Farrell-Birmingham Co., Inc.). USP 2 385 046, September 18, 1945. A yarn-handling machine is provided with "a unit assembly comprising a supply package of a plurality of parallel strands, an individual spindle for each of said strands, guides for directing one strand to each spindle, one strand leading straight enough to carry the twist back to the supply package, means for driving the spindles to take up and twist each strand, and co-related means for driving said supply package constituting the only means for transferring the strands from the supply package to the spindle packages.

THREAD GUIDE. Kenneth M. McLellan (to Industrial Rayon Corp.). USP 2 385 097, September 18, 1945. A guide for a yarn, filament, or thread comprises two members "crossingly positioned one above the other forming a bifurcation for guiding said yarn", on each of which the yarn bears while passing through, and means for supporting the members.

BALLOON GIRDLE. Kenneth M. McLellan (to Industrial Rayon Corp.). USP 2 386 704, October 9, 1945. A balloon-restraining girdle comprises two circular, co-axial rings, one above the other and with openings one above the other, to cover a rotating yarn-ballooning range; several supporting members that curve outward and that join the rings; and elongated members projecting from each of the rings in the planes of the rings. "One set of ends of said rings" are "joined forming an outwardly extending lip tangent to said rings".

SPINDLE. Robert Hargreaves and James Youngsma (to Whitin Machine Works, Inc.). USP 2 387 260, October 23, 1945. A spindle comprises a slightly flexible blade; a tubular yarn-package support fixed to the blade at its upper end only; a flexible diaphragm clamped to an intermediate part of the blade, below the supporting member; a belt-driven whorl for the spindle; means to clamp the periphery of the diaphragm to an upward annular extension of the whorl; a depending inner whorl sleeve fixed at its upper end to an upper part of the whorl and supporting the whorl; a fixed spindle base having a tubular upward extension; a ball bearing for the whorl with its inner race fixed to an intermediate portion of the whorl sleeve, which abuts an overlying shoulder of the sleeve, has its outer race slidably insertable in an enlarged recess at the upper end of the upward base extension, and seats against an underlying shoulder of the base extension; a bushing loosely, but non-rotatably, insertable in the base and providing a loose cylindrical bearing for the lower part of the depending whorl sleeve; and a relatively loose cylindrical

bearing member for the lower end of the blade, mounted for yielding transverse movement in the lower end of the spindle base. The ball bearing is effective both as a radial, and as a thrust bearing, and forms the only vertical support for the whorl, blade, and yarn package. At all times, the blade is free of contact with the driving whorl and the depending whorl sleeve.

WEIGHTING MECHANISM. Weighting for spinning and roving frames. Robert M. Jones (to Saco-Lowell Shops, Inc.). USP 2 387 703, October 23, 1945. In a drawing mechanism for spinning and roving frames a weighting mechanism is combined with a top drawing roll and with the means supporting it in its operative position. This weighting mechanism comprises: a T-shaped saddle, including a bar straddling the fiber-engaging surfaces of the roll and having end portions bearing on opposite end portions of the roll, the saddle including a shank portion extending from an intermediate part of the bar; and means connected with the shank portion for applying pressure to the saddle in a direction to weight the top roll.

TENSION INDICATOR. Thread tension measurer on spinning frames, etc. Aktges. Brown, Boveri & Cie. Brit. P. 568 231. In a device for measuring the thread tension on spinning and doubling frames, the thread coming from the rollers passes over a pulley fixed to a lever mounted on a shaft. This shaft is supported in roller bearings and carries a segment which engages by means of a tooth or band coupling a second segment, which has a pointer fixed to it and which is supported in a pivot bearing by a spindle. The shaft also has a spring which is unloaded in the zero position and is adjusted by a set screw. To increase the range of measurement, a second spring may be provided to act when a stop is in the proper position. The pulley is deflected according to the tension of the thread, and the deflection is transmitted to the pointer, which passes over a scale. It is also possible to transmit variations in tension to the indicating instrument by electrical means.

SPINDLE. Portable brake for belt-driven spindles. British Celanese, Ltd. Brit. P. 568 401. A spindle driven by a whorl, which urged by a spring, contacts a driving belt, is provided with a brake consisting of a lever pivoted on the machine near a spindle, one end of which lever acts as a handle and the other end, at an angle to the first, has a brake shoe for engaging the whorl. On being swung about its pivot, the lever forces the whorl out of engagement with the belt and stops rotation by friction between the whorl and brake shoe.

SPINNING APPARATUS. Twisting and spinning apparatus. Geoffrey Curtis (to Courtaulds, Ltd.). Can. P. 429 818, September 4, 1945. Brit. P. 568 032 appears to correspond. Apparatus for unwinding and simultaneously twisting

yarn from a yarn package rotating at least 7000 revolutions per minute comprises in combination a rotatable yarn-package support and a solid, fixed spindle. The spindle has at its lower end a ball bearing capable of carrying the weight of the yarn-package support and the yarn package, and at its upper end, near the center of gravity of the package, a ball or roller bearing. The natural frequency of vibration of the spindle when loaded with the yarn-package support is less than 3500 vibrations per minute.

TWISTING APPARATUS. Strand twisting apparatus. Robert Johnson Clarkson (to Dominion Rubber Co., Ltd.). Can. P. 429, 824, September 4, 1945. A machine for twisting together several strands without changing the twist of the individual strands about their respective axes comprises a first let-off package, a twisting spindle, a second let-off package supported by the spindle without being rotated by it, means for rotating the spindle to revolve a balloon of a strand from the first package about the second package and twist the strands together, means for pulling the strands forward, and tension means actuated by the tension of one strand to vary the tension of the other strand.

SCAVENGER ROLLS. Yarn-spinning frame scavenger roll mechanism. William Milnarik and John Bradshaw (to Alexander Smith & Sons Carpet Co.). Can. P. 429 850, September 4, 1945. In a yarn-spinning frame having several spaced spinning positions and in which each spinning position includes a set of drawing rolls, a stub shaft beneath the drawing rolls, and means rotatably supporting the stub shaft between its ends so that the ends are unsupported, there is a scavenger roll secured on each of the stub shafts. Each stub shaft is long enough to place one of the scavenger rolls next to the path of travel of the yarn from the drawing rolls in one spinning position to catch a broken end of the yarn, and to place the other scavenger roll similarly in the path of travel of the yarn from the drawing rolls of the next spinning position. There are also means to rotate the stub shaft continuously during operation of the frame.

YARN PRODUCTION. Staple fibre yarn production. William Pool (to Henry Dreyfus). Can. P. 430 055, September 11, 1945. Staple-fiber yarns and similar products are manufactured by feeding a succession of flat, wide groups of separated fibers to the tail of a staple-fiber yarn being produced in a direction across the length of the tail; applying to the tail at a point close to its end and at a second point away from the end, frictional torques in opposite directions, to bring about rapid rotation of the tail; bringing an end of each group of fibers into engagement with the tail as the end reaches the tail, so that the groups of fibers successively are taken up by the tail to form a new tail; and continuously drawing away the staple-fiber yarn as it is formed by the successive taking up of the groups of fibers.

SPINNING. Yarn spinning and twisting device. Albert Nau-Touron (to Isaak Frenkel). Can. P. 430 858, October 28, 1945. In a device for spinning and twisting textile threads of the kind provided with a spindle for a filling bobbin and a movable member coaxial with and revolving in the same direction as the spindle, in which the movable member and the spindle undergo relative axial displacements for distributing the thread on the filling bobbin, claim is made to a ring constituting a rotary member for guiding passing thread. The ring has guiding apertures distributed on its circumference in such a manner as to cause the thread received to pass into a first aperture, and then pass frictionally about the surface of the ring and extend into a second aperture at a distance from the first, then bear on a layer of thread already wound on the bobbin, thereafter pass into a third aperture of the ring to bear on the surface of the latter, pass into a fourth aperture of the ring at a distance from the third, and finally be wound up on the bobbin.

SIMPLEX RING FRAMES FOR WOOLEN SYSTEM SPINNING. CATALOG SF-110, Davis & Furber Machine Co., North Andover, Mass., 1945; 80 pp.; gratis. The novel features, performance, advantages relative to competitive equipment, etc., of "Simplex" high-speed ring frames are discussed in detail in this copiously illustrated catalog. The machinery can be used for wool, recovered fiber, rayon staple, silk waste, cotton waste, flax waste, camel's hair, jute, asbestos, feathers, etc.

IV, 2d. Rayon

YARN-FEED CONTROL. Yarn feed control means for textile machines. Pacific J. Thomas (to U. S. Textile Machine Co., Inc.). USP 2 386 822, October 16, 1945. A yarn-feed control comprises a driving drum, a yarn-take-up roll frictionally connected with the drum, "an element arrangement to be inserted between the drum and roll to effect disconnection", means for detecting yarn breakage arranged to control the action of the element, and a selectively movable means to prevent insertion of the element between the drum and the roll. According to the specification, this yarn-feed control is useful on equipment for twisting and winding rayons.

IV, 2e. Winding

BUILDER MOTION DRIVE. Newly-designed roving and twisting builder motion drive. A notable adaption of the Ferguson paradox. Anon. *Fibres, Fabrics & Cordage 12,* 323 (August 1945). A simple, silent, and potentially dustproof gearing for use between the coneshaft and the builder traverse shaft in roving and twister frames has been designed by William Gibson, The Edenderry Spinning Co., Ltd. A wheel on the coneshaft gears into a box-wheel which contains a Ferguson paradox

gear. The outside of the container is equipped with teeth which mesh with the wheel on the coneshaft. This container comprises a wide face wheel on a stud gearing into three wheels (of one-third its width), working on its shaft. One wheel is keyed on the shaft while the two other wheels are on sockets provided with clutch wheels which may be stopped by a clutch fitted on trunnions which are slidable and actuated by a motion of the builder. The three wheels on sockets and on the shaft have 43, 44, and 45 teeth, respectively, so that a backward motion of 44:1 or a forward motion of 44:1 is obtained, depending on which socket is arrested by the clutch. A provisional patent has been granted for the device.

FILLING WINDERS. Fixing filling winders shown by photographs. Alfred King. *Textile World 95,* No. 6, 113 (June 1945). Pictures accompanied by brief explanations show the causes and methods of correcting the chief troubles confronting the quiller mechanic: short heels, deep grooves on the heel of the quill, slip marks on the body of the quill, and tapered quills. The illustrations are of a No. 90 Universal filling winder.

PIRN WINDERS. Automatic pirn winding machine. Anon. *Textile Recorder 63,* No. 749, 57-8 (August 1945). The Abbott Machine Co.'s fully automatic weft winder (produced in England by Thomas Holt, Ltd.) is praised highly and its operation is described with the aid of a diagram. In this, as in the cone and cheese winder made by the same company, the spindles travel around the machine. Four colors can be wound at once. The numerous novel features are pointed out in the description.

WINDING AND WARPING. A new range of winding and warping machinery. "A Technical Correspondent." *Fibres, Fabrics & Cordage 12,* 322-3 (August 1945); *Textile Recorder 63,* No. 749, 52, 54 (August 1915). The novel features of winding and warping machinery made by Dixon Hawksworth, Ltd., Middleton, are pointed out. The machines are: a creel, a high-speed warper headstock, a high-speed winder, and a narrow-fabric warper.

REEL. Adjustable reel and collapsible support therefor. Reuben R. Berman. USP 2 382 968, August 21, 1945. An adjustable reel comprises a combination of two telescoping sleeves, a plate secured to each sleeve, pairs of arms pivoted to the plates, a toothed rack attached to one of the sleeves, and a hinged bolt clamp attached to the other sleeve selectively to engage the toothed rack; a crank inserted through the telescoping sleeves to rotate at least one of the sleeves; and a collapsible support comprising a rigid base, supports pivoted on the base, means holding the supporting members in a relatively rigid vertical position, and

means for clamping the supporting members to the crank.

BEAMER. Fritz Lambach. USP 2 384 474, September 11, 1945. A beamer comprises: a drive for rotating the beam; a pair of spaced supports for carrying the beam, each swingably mounted on the beamer; adjusting means associated with the supporting members for swinging them from a lower, beam-receiving position at which the beam is disengaged from the drive, into an upper, operative position at which the beam is coupled with the drive; and coupling means "associated with the supporting members for securing same to a stationary member of the beamer when the supporting members are swung into said upper operative position".

REELING. Reeling device and method of reeling. Fritz Pollak (to Oscar Kohorn & Co., Ltd.). USP 2 384 963, September 18, 1945. Yarns, filaments, threads, etc., are reeled in the form of a helix supported circumferentially on radial members connected to a rotatable reel, so that the supporting members rotate in unison about the longitudinal axis of rotation of the reel. Only a portion of the helix bulges radially outward relative to the remainder of the helix. The bulged portion is shifted circumferentially around the helix without altering the shape of the helix. Only the bulged part of the helix is fed longitudinally forward.

BUILDER MOTION. John J. Sippel (to H. W. Butterworth & Sons Co., Inc.). USP 2 385 888, October 2, 1945. A builder motion has a reciprocable member, means to impart uniform reciprocation to the member; a bell-crank lever mounted on the member and having one arm extending in the general direction of reciprocation and the other arm projecting outwards from it; a thread guide driven by the latter arm; an inclined guide with which the former arm is operatively engaged to oscillate the lever in timed relation to the reciprocation of the member; means to vary the inclination of the guide, comprising a crank connected to the inclined guide; a rotatable worm operatively engaged with the crank; and means to rotate the worm in opposite directions. The means to rotate the worm in one direction include a friction clutch.

WINDING MACHINE. Winding machine for producing tubular cops. Walter Siegenthaler (to Maschinenfabrik Schärer). USP 2 385 949, October 2, 1945. A winding machine for producing tubular cops includes "a working position for winding tubular cops in said machine, a feedable member carrying several winding spindles revolubly arranged for intermittently conveying said winding spindles individually to said working position on being correspondingly rotatively fed, a press member stationarily arranged for advancing the tubular cop winding being wound at said working position commensurate with its growth on the respective winding spindle, a counter holder displaceably ar-

ranged in opposition to said working position for bearing against the front end of said tubular cop winding, and a thread catch provided on said counter holder for catching the thread extending to the completely wound tubular cop as said cop automatically discharges from said working position, and passing other said thread to the winding spindle next arriving at said working position."

WINDING FILAMENTS. Making and packaging strands of material. Howard W. Collens (to Owens-Corning Fiberglas Corp.). USP 2 386 158, October 2, 1945. A method of packaging continuous strands of material comprises "simultaneously traversing in one direction a revoluble member with a plurality of strands, maintaining said strands in spaced relation during the traversing movement thereof as they are wound, and causing the free return thereof in a different spaced relation". Apparatus for accomplishing the above is claimed too.

REEL. Thread-advancing reel. Henry J. McDermott (to American Viscose Corp.). USP 2 386 249, October 9, 1945. A thread-advancing reel comprises a set of spaced, longitudinal bars rotatable about an axis; a second set of spaced, longitudinal bars "interdigitating with" the bars of the first set; means for supporting the second set of bars rotatably on an axis eccentric to that of the first set; means for rotating the bars; and means actuated by the rotation for rocking the bars of the second set with respect to their supports to affect alternate protrusion and recession with respect to the bars of the first set. (Each of the second set of bars is pivoted on the support on a single axis "transverse of the length" of the bar and of the axis of rotation of the second set of bars.)

BUILDER MECHANISM. Fred M. Roddy (to H & B American Machine Co., Inc.). USP 2 386 748, October 16, 1945. A builder mechanism for reciprocating a rail of a spindle or twisting machine, having an oscillatable rocker shaft connected to the rail, comprises a rocker arm on the rocker shaft; an adjustable element between the reciprocating means and the arm for transforming the reciprocating motion into oscillations of the rocker arm; and means for adjusting the element with respect to the axis of the rocker shaft, including a cam rotatable around the axis of the shaft, a cam follower engaging the cam and carried by the adjustable element, and means actuated by oscillation of the rocker arm for rotating the cam with respect to the rocker shaft to adjust the element.

REELING DEVICE. William H. Furness (to American Rayon Co., Inc.). USP 2 387 252, October 23, 1945. Apparatus for reeling thread and advancing the thread along the length of the reel comprises two cylindrical sets of thread-supporting members extending along the length of the reel; parallel mechanisms for mounting the thread-supports, mounted to rotate about parallel, spaced axes; and means for moving the thread-supporting members of one set relative to those of the other set in a lengthwise direction with respect to the reel. The thread-supporting members of both sets are rigidly secured to their respective mounting mechanisms.

WINDING MACHINE. Distributing control device. Waldemar C. Ewaldson (to Western Electric Co., Inc.). USP 2 387 570, October 23, 1945. "In an apparatus for winding material on a circular article including a unit to support the article and a rotatable serving head for the material" there are: "driving means to rotate the serving head at a constant speed to cause laying of convolutions of the material on the article, means to support the unit for rotary movement about an axis in alignment with the center line of the article, a variable element carried by the unit, a member operatively connected to the element and rotatable about the axis, driving means operable in synchronism with the driving means for the serving head and including the element and the member to move the unit and the article about the axis and center line to cause the portions of the convolutions of the material at the outer periphery of the article to successively lay at predetermined positions relative to each other, and means to actuate the element to vary the said driving means for the unit to vary the said positions of the portions of the material while the speed of the serving head remains constant."

WINDING MACHINE. Walter Siegenthaler (to Maschinenfabrik Schärer). USP 2 387 949, October 30, 1945. In a machine for winding a thread package there are: a driven winding spindle for supporting a thread package; a thread-guide drum engaging the package; positive driving means, independent of the co-operation between the drum and package, drivingly connected between the winding spindle and the guide drum for concomitantly rotating the co-operative parts; means for adjusting the position of one of the two co-operative parts relative to the other part in accordance with the growth of the package; and means for urging the drum against the package.

WINDING EQUIPMENT. Winding packages with tapered ends. C. H. Hampson (to Courtaulds, Ltd.). Brit. P. 567 673. Winding apparatus to make packages with a taper at each end comprises a roller receiving the thread, a thread guide carried by an arm which reciprocates parallel to the roller, and a swinging collar with a rod attached that passes through a slot in a lever pivoted in a traverse rail. Oscillation of the lever makes the collar reciprocate the arm. The roller is carried by a cradle which moves away from the thread guide as the package builds up, and the rod is moved towards its fulcrum, thus shortening the traverse of the guide.

KNITTING MACHINE. Wrap-thread feed

mechanism for knitting machines. E. Brooksby and F. E. Deans (to Bently Engineering Co., Ltd.). Brit. P. 568 130. A wrap-thread feed mechanism for knitting machines comprises thread guides mounted in a carrier and angularly displaced around the axis of the needle cylinder. A swinging link for each guide is pivoted in the carrier and a pivotal connection is between each guide and its link. The pivotal axis of the guide and link are both parallel with the axis of the cylinder, and cams co-operate with each guide and link, first to move the guide radially into feeding position, then to swing it to cause the thread-guiding portion of the guide to move across a preselected number of needles, and finally, with its link to return to the initial position.

YARN PACKAGE. Package with tapered ends. British Celanese, Ltd. Brit. P. 568 139. "A yarn package tapered at both ends is formed by having main layers of yarn covering the whole length of the package, each of the layers consisting of a number of subsidiary layers successively displaced along the length of the package. By this method, a small part only of the whole length of the yarn is ever exposed on the surface of the package."

WINDING MACHINE. Package holders on winding machine. Maschinenfabrik Schärer. Brit. P. 568 532. A winding machine is characterized by the provision on a common mounting of carriers for two kinds of thread package. "One carrier holds the package when required, with its axis vertical and the other a package when required, with its axis horizontal. Packages which require to be unwound differently can readily be handled by the single unreeling device which occupies hardly any more space than one having a single carrier."

CHEESING MACHINE. Franklin King (to Camille Dreyfus). Can. P. 430 708, October 16, 1945. In a tube-holder assembly for a winding machine there is combined with means for supporting the assembly on a winding machine, a bracket attached to the support, an arm pivoted on the bracket and adapted to be moved with respect to it, a shaft fixed to the bracket and another fixed to the arm—the shafts have a common center line, a-conical member mounted for rotation of each of the shafts to hold a tube between them, and means for retaining the tube on the tube-holder assembly on movement of the arm in a direction away from the bracket.

YARN WINDER. Yarn winding device. Charles L. Hivick and George L. McLuckie (to Camille Dreyfus). Can. P. 430 056, September 11, 1945. In a device for winding bobbins, etc., there are combined with a ring-twisting device having a traverse bar and a ring for directing yarn onto the bobbin, a builder arm imparting motion to the traverse bar, and a constant-moving drive oscillating the builder arm: means, including an idler pulley with a flat face, for accelerating and decelerating the motion of the traverse bar, imparted to the bar through the builder arm by the constant drive as

yarn is applied to a section at one end of the bobbin; and means for varying continuously the wind on the bobbin by a step-by-step motion relative to the package being formed. The wind-varying means comprises a ratchet wheel mounted on the builder arm, a hub integral with the ratchet wheel and forming an eccentric bearing, a second hub integral with the eccentric bearing, means operatively connecting the second hub with the idler pulley, and means for rotating the ratchet wheel on movement of the builder arm.

SPINNING APPARATUS. Bobbin spinning apparatus. Arthur Laurence Jackson (to Cornelius Constantinus Vanderhooven). Can. P. 430 604, October 9, 1945. In a bobbin-spinning machine comprising two alternate series of opposite bobbins and a transverse bar able to oscillate in a plane above and parallel to the axes of the bobbins, there are: a thread guide pivoted from the transverse bar between each pair of opposite bobbins, and means for causing each guide to be threaded automatically on contact with the thread to be wound. Each guide can be moved in an arc across the axes of the bobbins to place the thread guides in position to direct the transverse movement of the thread with respect to one series of bobbins, so that one series of bobbins may be wound during the doffing of the other.

IV, 3. Processing and finishing

YARN LUBRICATION. Malcolm H. Lyle and Clifton B. Smith (to North American Rayon Corp.). USP 2 383 505, August 28, 1945. A method of coating with lubricant thread moving at a continuously increasing linear speed comprises passing the thread through liquid coating material "freely held in suspension" placed in a bath whose width increases regularly. The path of the thread is shifted continuously in the direction of greatest width at a rate proportional to the rate of increase in the linear speed of the thread. In this manner the thread becomes coated uniformly.

STRETCHING YARN. Method for stretching cellulose ester yarn. Rollin F. Conway (to E. I. du Pont de Nemours & Co., Inc.). USP 2 385 403, September 25, 1945. Preformed, water-wet filaments, yarns, threads, and ribbons of artificial, thermoplastic materials are softened prior to being stretched to increase their tensile strength by passing them through a bath maintained at a sufficiently high temperature. The bath may be a low melting salt or mixture of salts, a pure metal, or an alloy. Exact conditions for the treatment of sized cellulose acetate yarn are given in examples disclosing the use of molten potassium thiocyanate, Wood's metal, solder, and tin. The composition of the sizes used is disclosed also.

IV, 4. Products (thread, yarn, cord, etc.)

PAPER MAILBAGS. Twisted paper made

Germany's mailbags. Anon. *Fibres 6,* 60 (August 1945). In Germany during the war a strip of kraft paper, of a width varying according to the thickness of the string to be produced, was twisted into a weavable thread, often at the factory which made the paper. The resulting woven paper bag was strong enough for all ordinary purposes. There was no need to process the paper pulp to produce a fiber. Heavy and substantial shopping bags and light net bags were also made from the same paper thread. A coarsely woven agricultural sack made later in the war was not as satisfactory. Heavy strings were made from the thin twine in the manner in which sisal or manila string is spun. Both the strings and light ropes were quite strong.

YARN NUMBERING. Conference on "A universal yarn count system". Proceedings in *J. Textile Institute 36,* P97-126 (August 1945). The proceedings of a conference on a universal system of yarn counts, held in Manchester under the auspices of the Textile Institute, and whose decision to adopt the Grex system was noted in the *Textile Technology Digest 2,* 331 (August 1945), are given in full here. Two charts show the commercial range of yarn count and fiber fineness, P100, and the relationships between the important existing direct and indirect systems and the American proposals, P101. The following papers are also given: A common numbering system for yarns with special reference to cotton and the Grex system, F. P. Slater, P103-8; Plain cotton yarns and fancy yarns, H. G. Greg, P108; Worsted yarn production, J. E. Garrett, P109-10; Scottish wool lens and a novel direct system, T. H. Gibson, P110; Rayon and a universal system of yarn numbering, A. E. Delph, P110-12; Rayon notes, A. Scholes, P112-4; Spun silk and a standard system, Robert W. Forrester, P114-7; Silk notes, W. R. Wadsworth, P117; Bast fibre spinning, H. L. Parsons, P117-9; Cordage and twines, H. A. Elkin, P119-22; A diameter basis suggested, F. N. King, P122-4; Hosiery notes, G. T. Littlefair, P124-5; and Cloth structure and a universal system, E. Brown, P125.

CONE MARKING. Cone marking machine and method. Charles K. Dunlap and Lawrence B. Stogner (to Sonoco Products Co., Inc.). USP 2 387 248, October 23, 1945. A method of color banding a number of hollow cones nested to form an elongated stick of cones comprises advancing the stick longitudinally and intermittently to a color-banding station, stopping the longitudinal movement intermittently for color-banding of the cones that come successively into registry with the color-banding station, rotating the cones during the banding operation, and repeating this cycle of operations until each cone in the stick has been banded.

STRETCHABLE YARN. Highly stretchable yarn. Boutwell H. Foster (to United States Rubber Co., Inc.). USP 2 387 320, October 23, 1945.

An all-textile yarn with a high stretch comprises a yarn with a crepe twist coiled helically about a central axis in the direction in which it is twisted, so that in its relaxed condition it has a diameter more than twice that of the uncoiled yarn and a greater number of helical coils per inch than there are twists of the crepe yarn per inch forming the helix. Typical constructions are given in the specification.

STRETCHABLE YARN. Method of making highly stretchable textile yarn. Nassib Haddad (to United States Rubber Co., Inc.). USP 2 387 321, October 23, 1945. A highly stretchable, all-textile yarn is made by winding a crepe twist yarn about a destructible core yarn in the same direction as the twist of the crepe yarn to form a first cover, winding a destructible yarn over the first to form a second cover, winding a second crepe twist yarn that is twisted in the opposite direction to the first crepe yarn over the second cover in the same direction as the twist of the second crepe yarn to form a third cover, and then destroying the core yarn and the second cover, so that the remaining first and third covers together form a balanced yarn with a high extensibility and a rapid elastic recovery. Typical constructions are given in the specification.

COMPOSITE YARN. Composite yarn and fabric. William H. Hall, Jr. (to Thermold Co., Inc.). USP 2 388 140, October 30, 1945. "A rubber integrated [pile] fabric" comprises "interwoven warps and wefts, at least one of which consists of a composite yarn formed of two different component kinds of fibres, including jute as reclaimed from rope, twine, burlap and the like as one of said components and a fibre having a high cohesive affinity for rubber as the second of said components". A composite yarn composed of crimped jute and cotton in the ratio of 30 to 50% cotton and 50 to 70% jute is claimed specifically. According to the specification, this fiber is used in making the base structure of pile fabrics for automobiles, mats, etc.

BALING YARN. Herbert Henry Almeroth and Fred Richardson (to British Ropes, Ltd.). Can. P. 429 801, September 4, 1945. "A package of yarns adapted for use for binding or bailing and like purposes, [is] formed of fibres spun or twisted together in a given sense, direction, or lay and combined into a strand having a lay of the like direction" "in which on the free or outer end of the strand is slidably arranged a sleeve, collar, ring, thimble or the like to restrain the yarns from unstranding or separating".

TIRE CORD. Textile product. Thomas Jackson, Donald Finlayson, and Thomas Barnard Frearson (to Henry Dreyfus). Can. P. 430 852, October 23, 1945. Tire cord of improved flex life comprises a small number of yarns having a denier from 80 to 1500 with a twist of 19 to 14 turns per inch in one direction, cabled with a twist of the order of

10 turns per inch in the opposite direction. The yarns are high tenacity yarns, having a basis of an organic ester of cellulose, which have been stretched and saponified.

IV, 5. Applications as yarn

CORDAGE. H. Williams, Everett & Williams. *Textile J. of Australia 20,* 222 (July 20, 1945). A short exposition on cordage and rope consists chiefly of definitions of terms (cordage, hawser, shroud, and cable) and statements of the uses to which various bast fibers (Manilla grass, New Zealand flax, Russian hemp, Italian hemp, cotton and coir) are put.

RAYON-TIRE CORD. Anon. *Fibre & Fabric 98,* 10, (September 29, 1945). The perfection of tires built with rayon instead of cotton cords is "the most important development in tiremaking since Goodyear developed the cord tire 32 years ago", according to an announcement by P. W. Litchfield, chairman of the Goodyear Tire & Rubber Co. The new cord "brings into prospect a set of tires that will last longer than the usual period of a car's ownership by an individual".

CABLE. Mine sweeping cable. David Larkin (to Broderick & Bascom Rope Co., Inc.). USP 2 384 038, September 4, 1945. A mine-sweeping cable comprises a core strand with four cutting strands laid up spirally around it. The cutting strands comprise a core and alternate cutting and supporting wires laid up spirally around it. The cutting wires are larger in diameter than the supporting wires. Alternate cutting strands are laid up in opposite directions.

ROPE. Edward Horace White (to The Whitecross Co., Ltd.). USP 2 385 241, September 18, 1945. A non-twisting rope consists of a core comprising a number of layers of wire wound to one hand, and two layers of wires around this core, these layers both being laid to the same hand, but to the opposite hand from that of the core. There is a twist in all the layers of the core with respect to the first or inner layer of the two covering layers. The product of sectional areas of the core layers multiplied by their respective distances from the center are not less than the sectional area of the two outer layers multiplied by their respective distances from the central axis of the rope.

HEATING ELEMENT. Heating element and method of production. Alfred J. Huck (to Knapp-Monarch Co., Inc.). USP 2 387 995, October 1930. A heating element for a heating pad or the like comprises a flexible core of asbestos, elliptical in cross section; a coil of resistance wire wound tightly around the core to make coil of elliptical cross section, and helically elliptical in form; a cover of flexible asbestos wound around the coiled wire and cover; and a winding of thread around the cover in the opposite direction to hold together the core, coil, and cover.

WRAPPING CABLE. Apparatus for wrapping elongated articles. Clyde N. Stover (to Western Electric Co., Inc.). USP 2 388 018, October 30, 1945. Equipment for wrapping cable splices with cord is claimed.

ROPE MANUFACTURE. Rope, line and cord manufacture. Harold Cantrell, Thomas Jackson, and William Howarth (to Henry Dreyfus). Can. P. 430 710, October 16, 1945. A throat or die for rope-making comprises a series of plates with apertures and means for clamping the plates together so that the apertures are aligned to form a tube. The edge of each aperture is rounded so that its intersection with any plane through the axis of the tube is wholly convex toward the axis.

IV, 5a. Coated or impregnated products

SHOE SOLES. Composition sole and method of making same. John E. L. Ryan. USP 2 386 269, October 9, 1945. Composition-shoe soles are made by winding a rope transversely around a flat core of uncured rubber, and vulcanizing the rope-wound core in a mold having a cavity the size of the finished sole to embed the rope in the rubber.

CORD MANUFACTURE. Cord making method. Edgar Chase and Richard Vernon Patchett (to Henry Dreyfus). Can. P. 430 709, October 16, 1945. Cord "secured against disintegration due to the slipping of fibres in the structure over one another" is made by incorporating in the cord, which consists mostly of yarns made of non-thermoplastic fibers, at least one yarn containing fibers of thermoplastic material; and subjecting the cord to the action of an agent for softening the thermoplastic material to make it take a shape imposed by the neighboring yarns and adhere to them.

IV, 5b. Laminates

LAMINATES. Laminated material stable to atmospheric changes. E. R. Angel (to Tootal Broadhurst Lee Co., Ltd.). Brit. P. 567 878. "Laminated products containing fabrics, fibre, yarns, etc., show movement with changes in atmospheric humidity. This defect can be reduced by treating the fibre, etc., with a low molecular weight resin solution which will penetrate the fibre and is there condensed to the final resin state. The stabilised material is then laminated by heat and pressure using a resin of high molecular weight to bring about the bonding."

V. YARN TO FABRIC

CANADIAN TEXTILES. Civilian textiles shortages will continue into 1946. Anon. *Can. Textile J. 62,* No. 18, 31-2 (September 7, 1945). "Cutbacks on war contracts for cotton, woollens and knitted goods will not permit sharp expansion of

civilian goods [in Canada] this year. [A] tighter supply position [is] expected on rayon yarns for civilian purposes. Nylon yarns [are] expected to be available for civilian use before the end of the year."

PARACHUTE CLOTH. Technicalities of manufacture in India. K. N. Tiku, Superintendent of Industries (Textiles), Jaipur. *Indian Textile J. 55,* 625-6 (June 1945). Brief instructions are given on the preparation of yarn and on the weaving and finishing of parachute cloth. The construction of four cloths is shown in tables.

TEXTILE MACHINERY. Novel ideas in Swiss textile machines. Ruti Textile Machinery Works, Switzerland. Anon. *Indian Textile J. 55,* 646-8 (June 1945). The novel features of the textile machinery manufactured by Ateliers de Construction Ruti, Switzerland, are pointed out. The machines considered are: modern looms, high-speed beam warpers, cone warpers, magazine-cone creels, creels with reverse cones, and hot-air drying and sizing machine for cotton and for silk and rayon. Two looms, a high-speed warper with an ordinary creel, and the hot-air sizing machine are pictured.

V, 1. Preparation

CREELING. Changing counts on a cone creel. Anon. *Fibres, Fabrics & Cordage 12,* 333-4 (August 1945). Six pictures show the method for changing the counts on Universal Winding Company's creels, carrying cones over the apexes of which the warp yarn is drawn. The method takes very little time, because one count is loaded while the other is running.

TENSION INDICATOR. William J. Elvin and John B. Steiding (to Celanese Corp. of America). USP 2 383 537, August 28, 1945. A tension-indicating device responsive to the tension in a travelling warp comprises a support; spaced links pivoted on the support; a rod carried by the free ends of, and bridging, the links, the rod extending across and above the full width of the warp and moved by it; and "a pointer movable by said rod, effected by the tension of said warp as a whole, into a visual indication".

DRIVE CONTROL. Drive control for textile machinery. John C. Bodansky and Ernest K. Whitener (to the Foundry Co., Inc.). USP 2 384 879, September 18, 1945. The speed of textile machinery, especially beam warpers, is controlled to keep the speed of the yarn constant through the winding operation by providing an electric motor, a follower roll kept in peripheral contact with a beam on which the threads are wound, a differential gear unit influenced by changes in the speed of the follower roll as the diameter of the beam increases, and means for regulating the resistance of the circuit containing the drive motor. The resistance means is actuated from the differential gear and regulates the speed of the motor.

WARPER. Drop wire compressor for warp drawing machines. Russel P. Drake (to Barber-Colman Co., Inc.). USP 2 386 600, October 9, 1945. A warp-drawing machine has the combination of a rotatable release key to be threaded through a bank of drop wires and to release them one by one as it revolves, a backer shiftable to compress a bank of drop wires on the release key, power-driven means for advancing the backer to compress the bank, and means operated in response to the attainment of a predetermined pressure on the bank for "disabling said drive means against further advance of said backer" until the pressure drops below the predetermined value.

REED. Reed for warping machines and the like. Frank H. Kaufmann (to Steel Heddle Manufacturing Co., Inc.). USP 2 386 689, October 9, 1945. A reed comprises several dents of thin, flat metal, in fan-like arrangement; and a frame for supporting the dents. The frame has top and bottom members, and end struts connecting the top and bottom members. The upper portions of the end struts incline outwardly, parallel to the dents at the respective ends of the reed, and the lower portions are vertical. Reinforcing strips are placed "immediately adjacent the end dents and extending parallel thereto" between the end dents and the end struts of the frame.

V, 2. Sizing

RAYON WARP SIZING. Evaluation of rayon warp sizing materials. I-III. G. B. Frankenberg, A. M. Sookne, and Milton Harris, Milton Harris Associates. *Rayon Textile Monthly 26,* 165-8 (April 1945), 227-8 (May 1945), and 285-6 (June 1945). Comprehensive tests have revealed fairly consistent relations between the efficiency of warp-sizing compositions for spun viscose warp yarns and the deformability of their films, the stiffness which they impart to fabrics, and the hardness of the film of size. Load-elongation curves of size times are useful in studying the effects of softners in sizing compositions, but the tensile behavior of the sized yarn is not related to weaving quality. A few tests on acetate rayon revealed that effective sizes for it were hydrophobic in nature. 21 References.

DYEING. Coloration of textile materials. Alexander James Wesson (to British Celanese, Ltd.). USP 2 384 001, September 4, 1945. Cellulose acetate fibers, foils, and films are dyed by applying to them a solution of 1,4-di-(ortho-methoxy-phenylamino)-anthraquinone in a mixture of 20 parts by volume of acetone and 280 parts by volume of "methylated spirits". Ethyl alcohol may be substituted for the methyl. According to the specification, this process can be used for other cellulose

esters and for cellulose ethers; and the dyes are fast to light, gas, and cross-dyeing.

V, 3. Weaving

LINEN WEAVING. Technical progress in linen manufacture. Weaving. "Technologist." *Fibres 6,* 71-3 (August 1945). Control of the humidity of the air in the weaving shed and control of warp tension are imperative in weaving linen, because of its inelasticity. The Catterall, Gledhill, and Bartlett and Roper let-off motions are described very briefly. Short descriptions are given also of the normal automatic warp-stop motions for linen looms; an improved high-speed loom with a new type of drop-box motion made by Atherton Bros., Ltd., Preston; a loom with an automatic shuttle-changing arrangement marketed before the war by the British Northrop Loom Co., Ltd., Blackburn; and modern Jacquard machines.

LOOM FIXING. Draper loom fixing. I. Ben H. Crawford, West Point Mfg. Co. *Cotton (U. S.) 109,* No. 7, 95-7 (July 1945). The first of a series on loom fixing, this article deals with the duties of the overseer and the second hand in the weave room. The overseer is responsible for the quality of cloth and the amount produced. He must have a complete knowledge of the work, skill in leading people, and interest in improving methods of work. He should supervise the training of workers, and have the duty of interpreting company policies to the employers. Specific duties of the second hand include: time keeping, assigning workers to machines when some people are absent, signing orders for supplies, assembling data for operation reports, checking the humidity, and inspecting bad warps and seconds to assist the overseer in showing up bad cloth.

LOOMFIXER'S TOOLS. Loomfixer's tools —weapons of production. III. Anon. *Textile World 95,* No. 6, 110-11 (June 1945). The simple hand tools the loomfixer requires are pictured and described.

SILK FACTORY. [Indian] Government silk weaving factory, Mysore. Anon. *Indian Textile J. 5,* 648 (June 1945). The silk-weaving factory established as a model by the Mysore government in 1931 is manufacturing georgette, crepe-de-chine, interlaced fabrics, suitings, ties, handkerchiefs, dyed cords for upholstery, and parachute cloth.

V, 3a. Looms

SWISS LOOM. An improved type Swiss loom. "Special Correspondent". *Textile Recorder 63,* No. 749, 50-1 (August 1945). The chief points of interest in the Saurer 100 W. loom are pointed out. They include: rigid construction; a positive-link picking mechanism, picking stick buffers on both sides of the loom frame (in single-shuttle looms), a widely adjustable picking cam; a fast reed

of unusual design; a stop motion that prevents severe shock when the loom bangs off; one swell instead of two; side- or center-weft forks; an accessible warp-stop motion; tappet, dobby, or Jacquard motions; an automatic let-off motion, which is described at some length with the aid of a diagram; and a totally enclosed, direct-type take-up motion. The shedding mechanism of the dobby and tappet motions is considered in some detail, as is also the automatic pirn-changing mechanism.

CORDED TAPE. Machine for making corded tape. David B. Brownlow and John Feulner (to The Russell Manufacturing Co., Inc.). USP 2 383 767, August 28, 1945. A machine for making zipper tape includes: drive-means; cord-forming means driven by the drive-means to twist longitudinal cord-strands into a relatively thick cord extending the length of the tape; weaving means driven by the drive-means to interweave the warp and weft strands into a relatively thin tapebody, and to weave at least some of the weft strands between certain of the twisted cord strands; a shedding hook to hold a number of cord-strands in a shedding position; and reciprocable means to shift repeatedly a cord strand into "a shedding-position engagement" with the shedding hook.

LOOM. Louis J. Zerbee. USP 2 383 903, August 28, 1945. A loom for weaving wire screen and having a beater is provided with a wire-feeding mechanism including: a drum mounted for rotation; means for rotating the drum so that its upper surface moves in the same direction as the warp wires are fed; means for supplying relatively stiff carbon steel wires to the drum, each warp wire being wound at least twice around the periphery of the drum; and tension means for the wires. The tension means is located between the drum and the beater.

REPAIRING FABRICS. Fabric repair machine. Sonia L. Hieber. USP 2 385 703, September 25, 1945. A device for mending fabrics by reweaving them comprises a table having a pair of slots through it, several pins fixed in relation to the table and projecting upward through one of the slots, a needle carrier below the table, several needles carried by the carrier and moved upward through the other slots, and means for reciprocating the carrier.

NARROW FABRICS. Production increase on smallware looms. T. B. Wilkinson. Brit. P. 567 836. Ribbons and other narrow fabrics of the type in which designs are woven in one or more colors, particularly the kind in which a colored thread is picked up by the weft, drawn through the shed, and tied in by the weft, are made by a loom on which the selection of the colored threads and their movement to cause them to be selected by the weft is effected by an auxiliary jacquard mechanism independent of the normal shed-forming mechanism.

Since the colored threads can be placed on large cones, the machine can be run continuously for long periods.

V, 3b. Loom parts

PICKING TAPPET. Design of a picking tappet. S. S. Ahluwalia. *Indian Textile J. 55,* 717-20 (July 1945). The manner in which picking tappets are designed is explained through a practical example.

POSITIVE DOBBIES. A positive dobby and its operation. IV. "Benlow". *Textile Recorder 63,* No. 749, 38-40, 58 (August 1945). The correct methods of setting heald and box motions on the usual type of Knowles dobby loom head are explained with the aid of diagrams of the dobby, the box motion and its connections, and the lock knife and associated equipment.

REED. Loom reed. Virgle Franklin McLane and Samuel Fuller McLane (to Southern Loom Reed Manufacturing Co., Inc.). USP 2 383 140, August 21, 1945. A cotton-loom reed having splits and a pair of half-round members fitting against the edges of the splits also has a pair of end bars whose ends fit between the ends of the half-round members. These end bars are provided with shoulders "adjacent the proximate surfaces of two pairs of half round members". There are caps having a pair of slots in them for receiving the end bars, which fit over the ends of the half-round members and are on each side of the end bars.

HEDDLE FRAME SUPPORT. Richard T. Osteen (to Walker Manufacturing Co., Inc.). USP 2 383 271, August 21, 1945. A heddle-supporting frame comprises spaced shafts, spacing members having angular extensions and connecting the end portions of the shafts, heddle bars operatively supported between the shafts, and, for shifting the frame, means extending through bores in the shafts and connected to the angular extensions. By relieving the shafts of the function of directly elevating and lowering the weight of the entire frame, the life of the shaft is prolonged, and both heddles and frames give more satisfactory service.

SHUTTLE. Shuttle threading and tensioning device. Joseph Coldwell (to John S. Coldwell). USP 2 383 239, August 21, 1945. In a threading and tensioning device for shuttles in automatic looms there is a base having spaced standards with aligned thread-retaining eyes, slots communicating with the eyes, guide openings for the slots so that a thread may be drawn through the guide openings and the thread-retaining eyes, and a thread-tensioning device mounted on the base between the spaced standards to engage the thread passing through the aligned thread-retaining eyes. This device is said to work automatically, provide for fine adjustment of the tension, be cheap to manufacture, and be capable of handling all standard types and sizes of threads.

PICK COUNTER. Pick counting device. Arnold Eddy (50% to Hilda W. Striker and 25% to E. G. Dentay). USP 2 384 901, September 18, 1945. A device for counting and registering the number of picks in a unit length of fabric being woven on a loom comprises in combination a measuring and indicating mechanism constructed to measure and indicate the length of fabric woven on the loom, and a controlling mechanism constructed to influence the measuring and indicating mechanism so that it measures and indicates only the length of the fabric woven during the weaving of a certain predetermined number of filling picks. The controlling mechanism includes a counting mechanism to terminate operation of the fabric-measuring and -indicating mechanism after counting a certain predetermined number of impulses, and impulse-creating means to create in the counting mechanism one impulse each time one filling pick is woven.

WEFT DETECTOR. Electrical weft detector for looms. Richard G. Turner (to Crompton & Knowles Loom Works, Inc.). USP 2 384 979, September 18, 1945. In a weft-detector base for a pair of slidable electric detector rods there are: a pair of elements to form the base between which the rods extend, means for supporting the detector rods and extending from one element toward the other, guide means extending from one element toward the other and over the supports, and means for securing the elements together with the detector rods between the support and the guide. Adjacent surfaces of the support and the guide are grooved to let the detector rods slide with respect to the elements.

SHUTTLE FEELER TIP. Elwood P. Sheetz and Alexander J. Chagnon. USP 2 385 034, September 18, 1945. Claim is made to a loom having a shuttle feeler, which is pivoted at one end, has a notch at its other end, and a hook on its upper surface. When the feeler swings on its pivot, its free end moves across the path of the shuttle and engages the thread extending from the shuttle. On its reverse swing the feeler withdraws the thread from the path of the shuttle.

SHUTTLE. James Gardiner Allen and Antonio Villani (to Draper Corp.). USP 2 385 048, September 18, 1945. A shuttle with a side-delivery eye to trap the filling thread effectively without interfering with the threading of the shuttle and sufficiently rugged to withstand long-continued use is described. The shuttle consists of a body having a recess for receiving a replaceable filling carrier and a thread passage communicating with the recess; a side-delivery eye with an open, thread-receiving slot in alignment with the forward end of the thread passage; and a hook on the eye next to the rear-end position of the open thread-receiving slot to form a wall of an opening in which the filling thread normally runs when the shuttle is threaded completely and to form a trap for prevent-

ing the filling thread from being thrown upward through the thread-receiving slot.

THREAD HOLDER. Thread holder for looms. Herbert A. Whitin (to Crompton & Knowles Loom Works, Inc.). USP 2 385 242, September 18, 1945. A thread holder for the weft ends of a weft-replenishing mechanism having a thread-holder support has a thread-engaging gear rotatable about an axis fixed relative to the support, means acting during loom operation to rotate the gear, a link pivotally mounted on the support, a second thread-engaging gear rotatable on the link—the weft ends are between the gears and are engaged frictionally by them—and resilient means acting on the link and operative to move the second gear bodily forward toward the first gear as the volume of weft ends between the gears diminishes.

SHUTTLE. Wilfred Joseph Gosselin (to U. S. Bobbin & Shuttle Co., Inc.). USP 2 387 438, October 28, 1945. In an automatic shuttle having a front tip, a bobbin recess, and a thread delivery eye passage extending diagonally forward in a straight line from the front of the bobbin recess to an outlet in the side of the shuttle between the front tip and the bobbin recess, there are: a threading slot, including a mouth having downwardly converging lips at its top, that extends down and diagonally forward from the top near the front of the bobbin recess, and enters the thread delivery eye passage along its front, on the side away from the eye outlet so as to form a trap hook extending down from the top front of the eye outlet; an eye outlet thread guide extending from in front of the end of the threading slot, out and down beyond the front and bottom part of the trap hook; and vertical outlet pins which extend across the front and back of the eye outlet.

SHUTTLE. Heinz Menking (to Aluminum Co. of America, Inc.). USP 2 385 718, September 25, 1945. A shuttle comprises a body of magnesium or an alloy containing about 80% magnesium, coated with a synthetic, thermosetting resin. Urea formaldehyde, phenol formaldehyde, melamine formaldehyde, and phenol furfural resins are claimed. If desired, the coating can be limited to those parts of the shuttle which wear rapidly. The specification discloses the use of resins mixed with asbestos, graphite, and glass-cloth fillers.

SHUTTLE. Carl D. Brown (to Draper Corp.). USP 2 385 756, September 25, 1945. A shuttle for an automatic bobbin changing loom has a side delivery eye and a passage extending forward and outward to communicate with the delivery eye. The passage is arranged to receive an incoming filling end during the first pick of the shuttle after transfer of a bobbin to it. A flexible guiding member bearing against one wall of the passage deflects the filling end forward and downward into the side delivery eye during the first pick after the transfer.

Completion of the threading during the first pick is to eliminate unthreading.

JACQUARD LOOMS. Jacquard compensating means. Jonas Robinson. USP 2 386 574, October 9, 1945. A device for compensating for the extension and contraction of an elongated element connecting a Jacquard to the element it actuates comprises means receiving a pulling moment transmitted by the elongated connecting element from the Jacquard, means transmitting a smaller pulling movement to the actuated element, and means carrying out a movement which is not transmitted to the actuated element and which may compensate for an extension or contraction of the connecting element. According to the specification, the extension or contraction that has to be compensated for is that caused by atmospheric conditions.

LOOM HARNESS. John Jacob Kaufmann (to Steel Heddle Manufacturing Co., Inc.). USP 2 386 690, October 9, 1945. A loom harness, including a heddle frame with top and bottom rails, and heddle supporting rods that are thin, flat, metallic strips, removably mounted in the frame, has means for supporting the rods at a point between their ends. These supports comprise, in each location, a plate "secured to the rod in spaced relationship, and a separate bolt member mounted in one of the rails of the frame". The plate and bolt are locked with each other. One of the members carries means for "normally maintaining the locked engagement" of these parts.

PICKER. Leon W. Campbell. USP 2 387 384, October 23, 1945. A loom picker comprises an inner body and a resilient casing that are moved relative to each other by the impact of the shuttle. The friction developed by this movement dissipates part of the energy of impact.

LOOM PART. Holdup for lug straps. Wingo Herron. USP 2 388 146, October 30, 1945. A holdup for a lug strap of a loom comprises "a fibrous frontal section, a rubber vulcanized fabric backing section thereto, a springy metal strip between said sections at the medial portion thereof and extending from the top of said sections to the bottom thereof, means uniting the sections and strip together, a head formation to the sections, a bottom portion formed on said sections and an intermediate body area therebetween and having opposed notches for loosely receiving the side stretches of said lug strap".

LOOMS. Gearing adjustment of treadle motion cams on looms. Gebr. Staubli & Co. Brit. P. 568 193. In a treadle motion for looms in which the angular displacement of the cams can be selected at will, there are mounted on a shaft cams which have spur teeth on both sides that mesh with one another; and rings with similar spur teeth for positioning the cams, which are clamped to the shaft so that the cams can be adjusted and clamped axially and angu-

larly. "To facilitate changing to another weave the number of teeth on the cams and on the rings is the least common multiple of the numbers of shafts required for different weaves."

LUG STRAP. Lug strap for looms. H. M. Bacon. Brit. P. 568 317. "A lug strap for looms has a U-shaped body consisting of a cushion layer and a strength layer, the cushion being the inner layer and thicker than the other one. Uniform strength distribution to working stresses is the claim for the strap."

V, 3c. Control devices; stop motions; bobbin selectors

STOP MOTION. Stopping means for looms. Carl D. Brown (to Draper Corp.). USP 2 383 931, September 4, 1945. In a loom there are: a reciprocating lay, means operated on warp failure to stop the loom, a filling-feeler fork that is tilted on engagement with the filling, a slide on which the fork is pivoted, cam-operated means for reciprocating the slide on failure of the filling, a loop on the fork to engage the reciprocating means on failure of the filling, a cam surface on the slide, a plunger engaging the cam surface and arranged to be moved when the slide goes forward, and a wire connected to the plunger to transmit movement of the plunger to the loom-stopping means "to condition said means for stopping the loom".

STOP MOTION. Stop motion device for pile fabric looms. Theodore Van Heek. USP 2 384 357, September 4, 1945. A stop-motion for pile-fabric looms, which includes means for severing a double fabric into independent layers of velvet and guide-bars for guiding the feeding movement of the double fabric during its severance, embodies, in combination, an electric circuit, a source of current, means operable by the circuit for stopping the loom, a stationary contact terminal in the circuit mounted on a fixed part of the loom, a movable contact terminal insulated from the other terminal and also mounted on the loom, and means contacting directly with the fabric and operable by an abnormal change of its position to move one of the terminal contacts in relation to the other to operate the circuit and stop the loom.

LOOM. Saint Julian Geddings. USP 2 384 909, September 18, 1945. A stop mechanism for looms with a protector mechanism includes a movable frog, a driving clutch comprising coacting friction clutch elements, a movable member to move one friction clutch element axially, an end-thrust ball-bearing unit between the movable member and the friction-clutch element, a toggle connected with the movable member, and means operated by the frog to break the toggle.

THREAD CONTROL. Thread control for weft replenishing mechanism. Clifford Darwin (to

Crompton & Knowles Loom Works, Inc.). USP 2 387 122, October 16, 1945. In a weft-replenishing mechanism for looms the usual hook for the thread guide is replaced by a small set of bristles, "which project close to the guides in the path of the descending weft ends at one side of the bobbins in transfer position. These bristles preferably extend beyond the path normally traversed by the threads and therefore arrest their downward movement while the bobbins are in the magazine, but at the time of transfer the bristles yield to permit the weft ends to move downwardly with their bobbins." These bristles allow the use of bobbins with the same kind of wind for both bobbin stacks.

BOBBIN MAGAZINE. End plate for multi-stack bobbin magazines. Richard G. Turner (to Crompton & Knowles Loom Works, Inc.). USP 2 387 197, October 16, 1945. An end plate for a weft-replenishing magazine has front and back, spaced, vertical bobbin-tip guideways, a bobbin-tip supporting-rail extending across the upper end of the plate from the rear part of the front guideway to the front part of the back guideway, and a bobbin-tip engaging wall extending up from the rail and across the top of the plate from the front part of the front guideway to the rear part of the back guideway. The wall has its front end inclined forward and down toward the front guideway, and its rear end inclined rearward and down toward the back guideway.

THREAD HOLDER. Thread separating thread holder. Oscar V. Payne (to Crompton & Knowles Loom Works, Inc.). USP 2 387 289, October 23, 1945. In a thread holder for a weft-replenishing mechanism from which two groups of weft ends extend toward a support separated from the mechanism, there are a pair of geared weft-end engaging units rotating on the support and extending on opposite sides of it tending to draw the weft ends away from the mechanism, a guide to direct one of the groups of weft ends toward the geared units on one side of the support, and a second guide to direct the other group of weft ends toward the geared units on the opposite side of the support. The support thus acts as a separator for the groups.

THREAD HOLDER. Thread guide for thread holders. Elliot A. Santon (to Crompton & Knowles Loom Works, Inc.). USP 2 387 302, October 23, 1945. In a weft-replenishing mechanism away from which two groups of weft threads extend, which mechanism has a pair of meshing gears rotating to draw the threads away from the mechanism with their axes extending to it, and two guides extending above the gears at different distances from the mechanism, one of the guides engages and guides one of the groups of weft threads toward the gears along a path relatively near the mechanism and the other guide engages and guides the other groups of threads toward the gears along a path farther from it.

LET-OFF. Warp let-off motion. Sulzer Freres Societe Anonyme. Brit. P. 567 851. A warp let-off motion for looms comprises a combination of spring-loaded levers which maintains the thread tension constant.

V, 3d. Processes

SALVAGING PATTERNS. Salvaging patterns can reduce entering costs. H. E. Wenrich. *Textile World 95,* No. 6, 141, 208, 210, 212, 214 (June 1945). "Weave patterns on hand often are suitable for new designs so that breaking up and re-entering can be avoided. Crossing ends with the heddles can speed up reeding. [The] headings [are] useful as records." The above statements are illustrated with specific examples and two photographs.

ELASTIC FABRIC. Elastic fabric and method of producing the same. Samuel C. Lilley and Edward E. Foster (to United Elastic Corp.). USP 2 384 936, September 18, 1945. Elastic fabric with scalloped edges, said to be highly flexible in one direction (transverse to the elastic threads), and to have the elastic anchored to prevent creepage in case it breaks, is made as follows: "laterally-spaced-apart elastic strands" are interwoven with "heat-shrinkable strands of artificial resin in such a manner that individual strands of" resin cross the elastic strands "in position to compress and grip the latter strands when the heat-shrinkable strands are shrunk; and then" heating the fabric.

V, 3e. Defects

WEAVING COTTON. Weave room efficiency. Expansion of cotton goods production. J. W. Hutchinson. *Can. Textile J. 62,* No. 19, 38, 60, 62 (September 21, 1945). An analysis of the causes of cotton threads breaking during weaving tells how to remedy them. The main places where breakages occur are: the back shed, the heddles, the reed, and the front shed. Tender yarns, soughed weft, snarls, and broken caps are the chief causes of weft breakages. Weavers have to be careful with the tumbler-weft fork; and in oiling the spindle block, in having the inner box slope at the same angle as the shuttle front, and in positioning the temples. Weavers must not alter the tension on the weft by cutting the mop. They should mend cracked shuttles.

V, 4. Knitting

GLOVERSVILLE KNITTING CO. Gloversville Knitting Co. observes 50th anniversary. Anon. *Textile Age 9,* No. 9, 29-30, 32, 35, 38, 40, 42 (September 1945). The Gloversville Knitting Co. began in 1895 with the knitting of wool and worsted gloves from purchased yarn. The gloves were made for warmth and utility. A second mill was built in 1914, and in 1918 the company erected its own yarn mill and a raw stock warehouse. O. D. regulation gloves were made for the government in World War I. During the war research was aimed at the development of new designs and manufacturing methods for the production of gay, contrasting colors in knitted products. The public readily accepted the new gloves, so that the facilities were moved to Schenectady in 1919 and a large, modern plant was built in 1923, and nearly doubled in size in 1939. In 1932 the circular knit, fancy cotton string glove was introduced, and proved very popular. Another "first" was the adaptation to manufacture on circular knitting machines of French angora rabbit hair gloves. The knitted fabric division was instituted in 1927. During this past war the company was 100% in war production. Some of the equipment owned by the company is listed, and the chief officers and oldest employees are shown in photographs.

KNITTING. The back-alley knitter. Harry W. Ruskin. *Cotton (U. S.) 109,* No. 7, 151, 154, 156 (July 1945). The troubles which can confront the tender of automatic knitting machines when the machines are strung along a "back alley" under windows kept open during hot, damp weather are discussed for the case of a person not getting adequate cooperation from the fixer. Remedies mentioned are: air conditioning, conveying hose from the machines to the operator who sits to inspect them and who determines from the code with which they are marked which machines need adjustment, and the placing of all fixers under one head who knows their abilities and who can hold them responsible for what they do.

KNITTING CALCULATIONS. Plain fabric calculations. Ed Shinn's answer to a question asked by K. W. M. *Southern Knitter 9,* No. 9, 36, 56-7 (September 1945). Formulas are given for calculating the gray weight per yarn and the production in pounds of plain knitted fabrics, assuming that the make of the machine, the number of feeds, the speed, the diameter of the cylinder, the number of stitches per inch, the counts of yarn, and the number of needles per inch, are known.

KNITTING DEFECTS. Good knitting fixing calls for preventive steps. Anon. *Textile World 95,* No. 6, 121 (June 1945). Illustrations show the appearance of dropstitches in the looper course, cuts in narrowings, and bad plating in the grey and dyed knitted material. The short text accompanying the pictures tells the causes of these defects and the methods of avoiding them.

NYLON. Southern Knitter 9, No. 9 (September 1945). The following articles discuss the return of nylon thread for hosiery and the problems it brings: Hosiery plants get green light on nylons, but the change has complications, by James T. McAden, pp. 25-6, 58-9; Dyeing and finishing nylon hosiery, by Joseph L. Wauters, pp. 28-9; Select-

ing colors for nylon's revival, by L. M. Richardson, pp. 29-30, 59-60; and Proctor & Schwartz bring out new nylon preboarding machine, p. 30.

WELT CONSTRUCTION. Method and means for producing stocking welt construction. Otto F. Smetana. USP 2 383 350, August 21, 1945. A welt-transfer bar for flat, full-fashioned knitting machines having bearded needles, sinkers, and knock-over bits for cooperating with the bar during the knitting of a stocking welt comprises several elongated hooks for engaging alternate loops of the initial course of the welt, several shorter hooks for supporting the remaining loops of the initial welt course, a transverse member uniting one end of the hooks, and means associated with some of the hooks for holding them in position on the needles during a transfer. The method of joining the initial welt courses of a stocking to a subsequent course, using this welt-transfer bar, comprises "releasably holding alternate sinker loops only of the first two courses, and at the same time releasably holding the remaining sinker loops of the first course, then knitting a plurality of subsequent courses, and then uniting said releasably held loops to the corresponding loops of one of the subsequent courses". Highly skilled operators are not required. The lock-stitch construction prevents dropped stitches in the welt from running into the stocking leg.

BEAM LETOFF. Brian Plunkett and Robert C. Scheib (to Celanese Corp. of American). USP 2 383 562, August 28, 1945. In a warp-knitting machine apparatus for letting off yarns simultaneously from a pair of connected packages there are combined: a drive shaft geared at one end to rotate continuously one of the packages, and driven at the other by a positive, infinitely variable gear-drive mechanism; means cooperating with the rotated package for continuously rotating the other packages; and means for controlling the speed of the rotating packages. The speed-controlling means is responsive to the quantity of yarn on at least one of the packages, so that the yarns are simultaneously and continuously let off the packages in a positive manner, and are fed to the knitting machine at a constant and unvarying ratio.

TEXTILE MACHINE. Tension control, stop mechanism, and warning signal for knitting machines. Robert N. Auble. USP 2 383 838, August 28, 1945. A constant-tension device for knitting, coning, etc., machines has in combination: a rocking lever with two arms, the longer having at its end an eyelet for guiding yarn and the shorter carrying an adjustable counterweight; means for pivotally supporting the lever; two more eyelets in the plane of movement of the lever; and means operated by the movement of the lever for signalling the machine tender and/or stopping the machine in cases where the yarn breaks. The three eyelets place friction on the yarn and thus provide

a constantly increasing effective lifting force on the long arm of the lever. This long arm adjusts to change the center of gravity of the lever system in a vertical plane including the sweep of the arm. As the center of gravity is raised by the movement of the lever, it offers constantly increasing resistance to the movement as the angle through which it has moved is increased. Various sorts of signal systems are claimed.

KNITTING METHOD. Method of knitting. Albert E. Page (to Scott & Williams, Inc.). USP 2 383 986, September 4, 1945. A method of knitting on a circular, multi-feed, double-ended needle machine comprises the steps of knitting a course of rib and plain stitches at one feed, laying a rubber strand on the rib and plain stitches at a point after the knitting point, enclosing the rubber by knitting another course of rib and plain stitches at another feed, knitting for one or more courses with the needles all in one cylinder while allowing the rubber to float and retrieve, and then commencing knitting again in two cylinders to cause the rubber to be incorporated in the fabric again.

HOSIERY. Robert E. Davis (to W. B. Davis & Son, Inc.). USP 2 384 079, September 4, 1945. Toes of seamless socks are made by knitting on the same tubular machine used for making the rest of the sock for a distance corresponding to the length of the toe. "Incorporated with the thread at the beginning of the toe portion is an additional thread forming terry loops on the inside surface of the fabric. After forming the tubular, terry toe extension, the sock is removed from the knitting machine and pressed . . . flat . . . The sock is then turned wrong side out and the flattened toe portion is cut to form tapered or rounded edges . . . [which] are stitched on an ordinary edging machine . . . The seam projects on the inside of the sock when turned right side out." Comparatively unskilled labor can be used for the sewing, while looping requires skilled labor.

KNITTING MACHINE. Straight bar knitting machine. Thomas Charles Bromley and Arthur Shortland (to Mellor Bromley and Co., Ltd.). USP 2 384 154, September 4, 1945. In a straight-bar knitting machine, having a sinker head for receiving individually-movable and dividing sinkers, claim is made to: a compound catch bar mounted for rectilinear reciprocation toward and from the head; means for reciprocating both of members of the bar; and means for causing the rear member of the bar to reach its forward limit of travel after the front member has reached its forward limit. The compound catch bar comprises separately movable front and rear members slidably connected for movement relative to each other. The front member is engageable with all the sinkers to align them in their advanced position and to retract them in unison. The rear member advances the dividing sinkers in unison.

KNITTING MACHINE. Ralph Norman Toone (to B. Toone (Nottingham), Ltd.). USP 2 384 214, September 4, 1945. In a knitting machine having needles and a yarn feeder displaceable between feeding and non-feeding positions there are: a stationary yarn-control device located at the plain side of the needles to receive a withdrawn yarn upon movement of the feeder to non-feeding position, and for positioning the yarn for re-introduction to the needles on movement of the feeder to the feeding position; a hook for receiving the yarn on movement of the feeder to feeding position; and a tip to the hook that encroaches into the gap which comprises the yarn-control device, for engaging the yarn on movement of the feeder into feeding position and for diverting it into the hook. The yarn-control device comprises a narrow gap extending across the run of the yarn and in the general direction in which the yarn is moved upon movement of the feeder to non-feeding position. It is stationary during displacement of the feeder between the latter's two positions.

SINKER HEAD. Sinker head for knitting machines. Alvin L. Brumbach (to Textile Machine Works, Inc.). USP 2 384 451, September 11, 1945. A sinker-head for supporting the sinkers and dividers of a full-fashioned knitting machine comprises a backing and an insert firmly secured to it, but readily removable from it, which has slots extending across the head; and means for guiding the sinkers and dividers, including the slots. The insert is soldered to the backing. According to the specification, the removable insert is replaced as the sinker head wears.

KNITTING MACHINE. Circular knitting machine. Thomas Charles Bromley and Arthur Shortland (to Mellor Bromley & Co., Ltd.). USP 2 385 056, September 18, 1945. "In a circular knitting machine [there are], in combination, at least one needle cylinder, needles in said cylinder, means for feeding yarn to said needles, desired ones of said needles being movable to an inactive position to enable knitting thereon to be temporarily suspended at required times, sinkers associated with said needles, [and] a cam system designed to cause (*a*) normal outward movement of the sinkers at one point preparatory to the formation of stitches by the needles, (*b*) normal inward movement of said sinkers after stitch formation to enable them to hold newly formed loops preparatory to further stitch formation, and (*c*) partial inward movement of the sinkers before the needles completely draw stitches and to an extent sufficient to position the said sinkers inwardly beyond the yarn feeding to the needles whereby undesired engagement of the yard by sinkers associated with inactive needles is avoided." The means for moving the sinkers inward consists of an individual presser element associated with the sinker.

KNITTING MACHINE. Henry Harold Holmes and Albert Henry Widdowson (to Wildt and Co., Ltd.). USP 2 385 081, September 18, 1945. A knitting machine has a series of needles; at least one movable yarn guide for a striping yarn; other movable yarn guides for a main yarn and a splicing yarn, respectively; and means for automatically operating the yarn guides interchangeably so that a striping yarn is supplied to a section of the needles while the main yarn and the splicing yarn are substituted for the striping yarn and supplied to the remainder of the needles during at least one course of knitting, periodically, and in the intervals the main yarn only is supplied to the section of needles and both the main yarn and the splicing yarn are supplied to the remainder of the needles.

KNITTING MACHINE. Controller mounting for knitting machines. Edward Vossen (to Stop-Motion Devices Corp.). USP 2 385 174, September 18, 1945. A controller mounting for a knitting machine comprises a bracket, a vertical rod "turnably mounted" on the bracket, resilient means for turning the rod a small angular distance in one direction, a horizontal arm mounted on the rod and having a horizontal finger hinged on it to bend downwards, resilient means for holding the finger horizontal, a controller box mounted on the bracket and having a horizontal shaft which turns a small angular distance when the controller is actuated, and a lever mounted on the horizontal shaft and having an offset end engaging in front of the horizontal finger for holding the vertical rod from being turned by the resilient means.

KNITTING MACHINE. Split-foot knitting machine. Arthur N. Cloutier (to Hemphill Co., Inc.). USP 2 385 611, September 25, 1945. In a knitting machine there is a combination of a cylinder; a dial; means for knitting on needles in both the cylinder and dial, and for transferring stitches from dial needles to cylinder needles, including means for shogging the dial, retarding one group of needles with respect to the other and afterwards causing the latter group of needles to gain with respect to the other group; means for containing knitting after transfer by rotation of the cylinder; and other means for controlling the cylinder needles to reciprocate them and to knit two portions of fabric inter-connected by knitted sutures. The specification is unusually detailed—there are 28 pages of description and 160 diagrams.

KNITTING MACHINE. Machine for knitting hosiery. Herbert Edward Woodcock (to William Cotton, Ltd.). USP 2 385 672, September 25, 1945. Straight-bar knitting machines for making stocking blanks with heel tabs, and equipped with needles (including a central group of instep needles) and with two sets of transfer points has, in combination, means for temporarily suspending knitting operations on the instep needles while they continue to hold their loops and while the knitting of heel tabs proceeds on needles beyond the ends of

the group of inactive needles; means for operating the transfer points periodically to transfer progressively outwards at least the inner margins of the heel tabs; means for simultaneously making a corresponding increase in the number of temporarily-inactive needles that are comprised in the periodically widening central group; auxiliary points at the inner ends of the sets of transfer points; operating means for causing the auxiliary points to transfix the previously-knitted fabric at the plain side of the needles and to position it for reception by the needles that are progressively rendered inactive so that the needles thereafter retain the fabric; and means for causing the needles of the widened group to resume knitting, after production of heel tabs of the desired length, and to produce further fabric the first course of which is united to the inner margins of the heel tabs.

DARNING MACHINE. John Page and Leslie Trevor. USP 2 385 936, October 2, 1945. A machine for darning socks, etc., comprises a curved needle bed for receiving individually-slidable, bearded knitting needles presenting their beards at the outer convex surface of the bed and at one end of it, which bed affords a passage for butts of the needles to be presented at the concave surface of the bed; an oscillating cam in the concavity of the bed for engaging the butts and for imparting knitting movements to the needles during oscillation of the cam in each direction; a yarn feeder; means arranged about the end of the curved bed for pressing the bearded needles; a mounting on which the presser means is displaceable away from the bed to permit insertion or removal of the sock; means for oscillating the cam; a fabric take-up device and means for operating it with a step-by-step motion to take up the fabric as darning proceeds; a holding-down device for engaging the exterior of the fabric; and means for periodically lifting the holding-down device "coincidentally" with the step-by-step operation of the take-up.

KNITTING MACHINE. Circular knitting machine. Henry Harold Holmes and John Cyril Herbert Hurd (to Wildt and Co., Ltd.). USP 2 386 314, October 9, 1945. A circular knitting machine is provided with a grooved bed, independently-movable pelerine instruments prearranged in the bed, lap-thread guides also prearranged in the bed—both instruments and guides have patterning butts divided into primary and secondary groups—means for acting selectively on the primary butts to effect a general selection among all of the pelerine instruments and lap-thread guides, and means "for thereafter co-operating with the secondary butts suchwise that selected pelerine instruments are restored to their original inoperative positions, thereby leaving the selected lap-thread guides to be operated as required".

DISTRIBUTOR RING. Electric distributor ring for rotary knitting machines. Michael Wachsman. USP 2 387 100, October 16, 1945. An electric distributor ring for a rotary knitting machine consisting of two electric conducting rings, one of which rotates on the other, has a hanger bracket on the rotating ring for attaching the ring to the knitting machine to rotate the ring with it, a finger piece supported the bracket and overlapping the stationary ring to prevent separation of the rings, and means on the hanger bracket for keeping the finger piece overlapping.

ELECTRIC CABLE. Apparatus for insulating electrical conductors. Clyde N. Stover (to Western Electric Co., Inc.). USP 2 387 191, October 16, 1945. An apparatus for insulating and weatherproofing electric conductors comprises a knitting head having a conical opening through which a conductor is advanced, and designed both to knit strands into a cone-shaped textile basket about the conductor within the conical aperture and to draw the textile basket, after it has been impregnated, down into a tight, compact covering on the conductor; "an extruding means including a cylindrical core having a passage therein through which the conductor is advanced to the knitting head; and an outer cylinder enclosing the core and forming therewith an extruding passage through which an insulating and weatherproofing material may be extruded" upon the cone-shaped basket knit about the conductor prior to its being drawn down onto the conductor.

KNITTING. Knitting method and machine. James L. Getaz (to Scott and Williams, Inc.). USP 2 387 253, October 23, 1945. A circular knitting machine of the superposed cylinder type comprises upper and lower cylinders rotating in unison, needles to slide in the cylinders, sliders in the upper cylinder to operate the needles in it, means for controlling the movements of needles in both cylinders to form stitches, means for projecting a wrap yarn outward between the cylinders and across the needle circle between panels of rib needles in the upper cylinder to present the yarn to at least one needle of a plain panel in the lower cylinder, and means for raising the sliders at the wrapping zone to avoid engagement of the wrap yarn with it. The needles are arranged, during at least a part of the operating cycle, "in panels in the upper and lower cylinders, respectively, to produce a broad ribbed fabric".

KNIT FABRIC. Knit fabric and method of making same. Albert E. Page and Frank R. Page (to Scott & Williams, Inc.). USP 2 387 768, October 30, 1945. In weft-knit welt-fabric, the first few courses of which include in at least one course and, spaced apart at least two wales, at least one welt loop at a recurring wale, there are one or more following courses having loops at all of the wales, the welt loops of which are inter-knit with a following course of the stocking to form a welt. The method of knitting these welts is claimed too.

KNITTING MACHINE. Circular knitting machine and method of operating same. Albert E. Page and Frank R. Page (to Scott & Williams, Inc.). USP 2 387 769, October 30, 1945. Claim is made to "a circular knitting machine having a dial and transfer elements therein, a cylinder and independent needles therein, in combination with means for raising the needles on each side of a needle to which a loop is to be transferred, said parts being so spaced that each transfer element, when advanced, is held in registry, by the adjacent raised needles, with the needle to which it is transferring a loop".

KNITTING. Forming of welts in straight knitting machines. Hans J. Straussberger (to Alfred Hofmann, Inc.). USP 2 387 780, October 30, 1945. A method of knitting stocking welts by means of banks of sinkers, rear-bearded needles, "and other co-operating instruments"; and a bank of rear-hooked and latched welt-hook implements, one for each alternate needle, comprises "the steps of placing the welt implements behind and in planes of alternate needles with the implement shanks engaging the beards of such needles, laying and sinking the first yarn course to form loops behind the alternate needles and behind the hooks below the latches of the implements respectively, lowering and again raising the implements while sinker tension is maintained on the yarn thereby to cause alternate loops to pass relatively upward from the implement hooks and under the latches and thence downward inside the hooks, relatively manipulating the needles and implements carrying respectively the alternate loops to cause the implements to pass relatively above and frontward of the needles thereby completing the hooking-up of the fabric, and thereafter laying and sinking on the needles second and further yarn courses and interlooping them for the production of the welt fabric".

KNITTING MACHINES. Screw racking mechanism for straight bar knitting machines. William Cotton, Ltd. Australian P. 119 851. A screw-racking mechanism for straight-bar knitting machines consists of a cam on a clawker support, which engages an abutment for releasing a spring-loaded plunger from locking engagement with a notch in a disc during the initial portion of the racking stroke of the clawkers; and clawkers, which are moved by a cam during the racking stroke and by a spring on the return stroke, which are on a support oscillating on wheels coaxial with a screw-racking mechanism, and which are selected for forward-racking or back-racking by bluffs connected to the patterning mechanism.

KNITTING MACHINE. Picker mechanism for circular knitting machines. E. Brooksby and F. E. Deans (to The Bentley Engineering Co., Ltd.). Brit. P. 567 652. A picker mechanism on a circular knitting machine, which will function satisfactorily though there may be a gap of several long butts in succession due to the layout for patterning, has a downwardly directed, central rib on its central portion adjacent to the needle cylinder, and has extended and arcuate wing edges. "The curvature of the edges is struck from the vertical axis . . . about which the picker swings and" the central rib. When the picker has been swung to one side during a picking action the central portion will lie as far back as the outer ends of the butts with which the picker has to cooperate so as not to interfere with the picking. The extensions are set back to such an extent that in all positions of the picker they will just miss the butts which are carried by the cylinder and which are to be picked, but will engage beneath the long butts despite any gap which has been arranged so as to occur in the row of long butts. The picker is mounted to turn about a horizontal axis on a pin received in a hole in its "shaft".

KNITTING MACHINE. Knitting: fabric tension release during welt turning. W. G. Macdonald and W. A. Cooper (to W. Cotton, Ltd.). Brit. P. 567 994. In a straight-bar knitting machine equipped with automatic welt-turning apparatus that includes a welt bar movable away from and towards the needles, and with biassed draw-off apparatus for connection to a welt rod, a mechanism is provided for relaxing the pull of the apparatus during the advance of the welt bar. Where the draw-off apparatus comprises a shaft rotating in a draw-off direction, there may be a coupling which idles during the draw-off, and the mechanism causes the coupling to rotate the shaft in the reverse direction at the required time.

KNITTING MACHINE. Wrap-thread feed mechanism for knitting machines. E. Brooksby and F. E. Deans (to Bentley Engineering Co., Ltd.). Brit. P. 568 265. Claim is made to a wrap-thread feed mechanism for a knitting machine, in which the thread layers engage a wrap-thread only when the layer is projected. A thread-guide ring is adjacent to the thread-engaging portions of the layers to position the threads so that they will be engaged by the layers when the latter are projected. The necessity for thread take-up devices is eliminated in this fashion.

CABLE CORE. Insulated conductor core. Ben King Ford (to Western Electric Co., Inc.). Can. P. 430 588, October 9, 1945. A covering is knit on an electrical conductor core with the wales of the covering extending spirally about the core in one direction, and a second covering is knit on the first covering with its wales extending spirally about the core in a different direction.

KNITTING MACHINE. Circular knitting machine. Thomas Charles Bromley and Arthur Shortland (to Mellor Bromley & Co., Ltd.). Can. P. 430 933, October 30, 1945. A circular knitting machine comprises, in combination, a cylinder, needles for operation in the cylinder, a part by which

fabric is supported and caused to follow an inward path as it leaves the needles, a movable fabric-engaging member the operative end of which is directed toward the needles, a carrier for this member, means for moving the carrier axially within the needle cylinder to bring the fabric-engaging member into engagement with the work and thereupon to cause the member to apply tension to the work, and control means for effecting inward radial movement of the member on the inside of the needle circle, "conjointly with said axial movement of the carrier, as knitting proceeds, whereby after being engaged with an appropriate portion of the work the operative" end "has imparted to it a compound downward and radially inward movement conforming with the . . . path followed by the work, for the purpose described".

V, 5. Pile fabrics, laces, embroideries, netting

FRAYING AND SLIPPAGE. Fraying and slippage in woven textiles. "Technicus". *Textile Recorder 63,* No. 749, 43-4, 49 (August 1945). Threads of loosely woven fabrics can be kept from fraying and slipping during weaving, the operations subsequent to weaving (scouring, bleaching, crepeing, dulling, dyeing, printing, and finishing) and during use by the selection of proper binding warp sizes, by handling the cloths carefully, and by use of resin finishes. The places in the above-mentioned operations where trouble is apt to arise, and the methods of avoiding it, are pointed out.

AXMINSTER LOOMS. Nose board for Axminster looms. Stanley N. McCaslin and Arthur Lamb (to Crompton & Knowles Loom Works, Inc.). USP 2 384 322, September 4, 1945. An Axminster loom having a knife which moves to a cutting position to cut pile tufts is provided with "pile tuft engaging hooks which when in normal position are behind the tufts to be cut and in position to be engaged by . . . [the] knife when . . .[it] moves to cutting position, and means mounting . . . [the] hooks for movement away from the normal position . . . by . . . [the] knife when engaged by" it. This arrangement aims at preventing the front knife from striking the pile-tuft hooks at the left of the loom, and at allowing the weaving of either high or low tuft piles without laborious changes in the loom.

PILE FABRICS. Treatment of textile fabrics. Cyril Pearson (to Courtaulds, Ltd.). USP 2 384 871, September 18, 1945. Pile fabrics are obtained from cotton, wool, regenerated cellulose, and casein by treating the fibers with a solution of unpolymerized or partially polymerized resin (termed "intermediate resin"), subjecting the fabric containing the fibers to a raising operation, and then converting the resin to the insoluble form. The fabrics have "improved handle and appearance". Cyanamide-formaldehyde and urea-formaldehyde resins are claimed specifically.

AUTOMOTIVE TRIM. John R. Millar (to National Automotive Fibres, Inc.). USP 2 384 951, September 18, 1945. Trim panels for use on automobiles and simulating woven carpet are made by "flocking an adhesively coated surface". The surface is vibrated to embed the floc fibers endwise in the adhesive. Pattern effects are produced by masking parts of the surface during the first operation and repeating the operation after masking the parts left unmasked during the first operation.

PILE FABRICS. Apparatus for making pile products. Leroy N. Linscott (to Alexander Smith & Sons Carpet Co., Inc.). USP 2 385 925, October 2, 1945. Apparatus for making pile fabrics comprises means to feed intermittently a backing with a cementitious coating on it to a pile-deposition station; means to feed intermittently a pile-forming material to a serving station; a knife to sever the leading-edge portion of the pile-forming material; a rotor provided with grippers; means to rotate the rotor intermittently to place a gripper in position to grip the leading-edge portion of the pile material prior to its severance, and after severance to place the gripper at the pile-deposition station in a vertical position with the lower ends of the pile elements spaced from and at right angles to the point on the coating at which the lower ends are to be embedded, the rotor having means to advance the gripper in a direction toward the pile material at the severing station; and means to move the gripper downward at the pile-depositing station so that the pile elements are embedded in the coating, and to move it upward after the pile elements have been embedded.

CUTTING MACHINE. Apparatus for feeding and cutting material into definite lengths. Leroy N. Linscott (to Alexander Smith & Sons Carpet Co., Inc.). USP 2 385 926, October 2, 1945. Apparatus for feeding and cutting material into pile elements of definite lengths comprises means to feed intermittently a pile-forming material, a table to which the pile is fed, a pusher engaging the pile material on the table and advancing it over the table into position for serving, a gripper to grip the leading edge portion of the pile material prior to its severance, and a knife to sever "the pile material extending beyond said table and while held by said gripper".

WIG NETTING. A. E. Hunter and S. F. Topott (to Byard Manufacturing Co., Ltd.). Brit. P. 567 854. "Netting for wig manufacture consists of a double warp traverse net in which each warp in between a predetermined number of sequential pillarings with a bobbin thread alternately crosses and ties with an adjacent warp of the same face. Where the front warps cross, the rear warps tie, and vice versa."

V, 6. Mechanical processing

NARROW FABRICS. Process of weaving,

transporting, and finishing cloth. Arnold Eddy (one-half to Hilda W. Striker). USP 2 384 288, September 4, 1945. Gauze bandage and ribbon are finished by winding wide cloth on flexible tubes made of cardboard, rubber, or fabric; removing and transporting to a cloth-cutting machine the cloth rolls together with the tubes; cutting both the cloth on the wide-cloth roll and the tube to form relatively narrow fabrics wound on the cut portions of the tube; and transporting these small rolls wherever required.

FLATTENING TUBES. Apparatus for spreading tubular fabrics. Samuel Cohn, Joseph Cohn, and Jules G. Walter. USP 2 385 402, September 25, 1945. A system for spreading and flattening a traveling tubular fabric, by passing the fabric to transverse driven rolls engaging and drawing the fabric in flattened form between them, is claimed. A floating spreader is inside the fabric to draw the fabric into the nip of the driven rolls. It comprises a transverse dead bar at the rolls, and side frames connected to the dead bar and carrying freely rotatable pulleys with idle belts running lengthwise along the side frame. The idle belt contacts the fabric at the edges and moves with it to a point adjacent to the driven rolls, so as to spread the fabric and deliver it to the rolls without substantial frictional drag at the spread area. There are side rolls, having grooved peripheries engaging the fabric and pressing it against the belt, to support the floating spreader.

TUBES. Manufacture of tubular products. Francis C. Browne (to Industrial Rayon Corp.). USP 2 386 653, October 9, 1945. In apparatus for manufacturing tubular articles by winding strip material in overlapping helical turns, means for supporting and positively advancing the article in a direction parallel to its longitudinal axis comprises a cylinder mounted for rotation, one end of which has a periphery containing a number of axially spaced slots; and a second member of generally circular cross-section having a periphery of axially extending bars to fit in the slots of the cylinder. The second member rotates about an axis offset from and inclined to the axis of the cylinder, in order to advance the tubular article over the periphery of the cylinder. In one claim, the cylinder is provided with internal "heated means". "Adjacent cutting means" for cutting the tubular articles into sections of predetermined length are disclosed in several claims.

CUTTING DEVICE. Oscar L. Bright (to United States Rubber Co., Inc.). USP 2 387 876, October 30, 1945. A device for slitting fabrics comprises a slidably mounted block with a clamp for supporting a cutter holder, a bar-like cutter holder to be clamped to the block in operating position and formed of two relatively long clamping plates having a blade-receiving slot between them, a thin cutting blade with a cutting edge along one

side and lying entirely in the slot so that it is clamped by the plates, and in the plates a transverse slot spaced from one end of the holder and extending in from a side of the holder to expose a small portion of the cutting edge. As the portion of the cutting edge thus exposed becomes dull, the blade is shifted in the slot to expose a sharp portion.

BIAS FABRIC. Bias fabric making method. Percy Gardner (to Lever Bias Machine Corp.). Can. P. 430 165, September 18, 1945. A method of making bias fabric comprises "the step of pulling sheet material out of a container and through a series of treatment-zones or positions, during which the material is formed into approximately tubular form, fastened at its adjacent edges to form a tube, subjected along the finished seam to regulated tension, subjected to a regulated stretching and flattening pressure and then allowed to drop loosely folded into a container".

FELT PRODUCTION. Fibrous material processing. Carleton S. Francis, Jr. (to Sylvania Industrial Corp.). Can. P. 430 695, October 16, 1945. A thick, light, textile felt is formed by: confining between porous members, without subjecting the layer so confined to pressure, a thick layer of dry, loose, intermingled fibers of thermoplastic and non-thermoplastic fibers mixed by carding or by concurrent condensation from a common gaseous atmosphere; and passing steam through the layer of fibers so confined. The steam has a temperature chosen "to activate said thermoplastic fibres to bind fibres in said felt without destroying the fibrous character of said thermoplastic fibers".

V, 7. Products; design; construction

LACE HOSIERY. Sewing departments started for lace hosiery. I. G. Sanford. *Textile World 95,* No. 6, 133 (June 1945). Because of yarn shortages, some full-fashioned hosiery mills are making hose from cotton Levers lace and are reserving rayon for the welts and feet. Looper and seamer operators are being taught to run the sewing machines. The various parts to be sewn are shown in a picture. One operator does only one part of the sewing, e. g., of the welt to the top of the leg blank.

PLAIDS AND CHECKS. Designing and dyeing plaids and checks. Anon. *Am. Wool Cotton Reptr. 59,* No. 39, 11-12 (September 27, 1945). The procedure used by mills for duplicating sample swatches of woolen plaids and checks is described. The proper selection and preparation of stocks for making the first samples is stressed. It is especially important that the dyeing department be told that the yarn is going into plaids or checks, so that the dyeing department can select dyes which are fast to fulling and milling. The methods of dyeing and cross dyeing employed, and the problems in wool blends in preventing streaks and uneven dyeing are discussed.

SUITING DESIGNS. Designs for suitings. Backed cloths. L. Bellwood. *Textile Weekly 36,* 268, 270, 272 (August 10, 1945); 312, 317 (August 17, 1945). Pictures of the cloth and design diagrams illustrate a discussion of backed cloths for suitings. The following designs are considered: twills and herringbones, stripes, twill with spots, a fancy twill with stripes.

TAFFETA. Fabric histories. Taffeta. Anon. *Fibres 6,* 63 (August 1945).

MATTRESS CONSTRUCTION. Max Weisberg. USP 2 383 175, August 21, 1945. A mattress has transverse partitions dividing the interior into a series of wedge-shaped compartments and has horizontal partitions of flexible, semi-rigid material sub-dividing the entire length of each wedge-shaped compartment. The horizontal partitions in each compartment are staggered with respect to the horizontal partitions in adjacent compartments.

BED COVERING. Quilted bed covering. Rebecca Davis. USP 2 383 592, August 1945. A rectangular bed covering includes a casing having opposed walls permanently interconnected along three edges, but along the remaining edge only next to the corners of the covering, to provide an opening narrower than the width of the covering; a removable filler in the casing; and a "series of closure portions detachably interengaging said opposed walls and a series of portions releasably engaging the adjacent edge portion of the filler member to anchor the filler member". One of the walls of the casing has two sheets of cloth with a soft filler between, interconnected "by a field of stitching coextensive with said wall so that the latter is quilted in structure". The filler insert has "sheet elements and a soft filler element between the sheet elements, the said elements being interconnected by a field of stitching so that the filler member is quilted throughout".

MATTRESS. Alfred Klazkin. USP 2 384 097, September 4, 1945. In a mattress are combined an oblong rigid frame, cross interlacing webbing strips secured crosswise and lengthwise to both the top and bottom of the frame, and a single means for increasing the tension of the lengthwise webbing elements uniformly. The tensioning means comprises two rollers mounted inside one end of the frame. Each roller has one end projecting from the frame and has one set of lengthwise webbing elements secured to the other. Turning handles are attached to the projecting ends of the rollers. A ratchet and a pawl mounted on the frame next to the handles prevents the release of the rollers as the lengthwise elements are tightened by the handles.

HOSE. Knitted fabric. Albert E. Page (to Scott & Williams, Inc.). USP 2 384 392, September 4, 1945. A knitted sock with a "self-sustaining top" is composed of not more than two plain

courses in repeated alternations with two or three courses of rib fabric, in combination with an elastic thread enclosed in each group of rib courses. "Spaced protuberances are formed on the back of the fabric in the plain courses to make the top self-sustaining."

AIRPLANE CLOTH. Covering material for aircraft frame structures and the like and method of producing the same. Alfred Ryan (to The Ioco Rubber and Waterproofing Co., Ltd.). USP 2 384 771, September 11, 1945. Material for covering airplane frames comprises as a base a fabric woven from non-corrosive metal wires in one direction and textile yarns in the other; a first coating of a resinous, glutinous, or rubber-like material to unite the points of contact between the threads and wires; and an outer coating of rubber, or of rubber-like or plastic material to form a smooth, continuous outer surface. The wires must be woven so as to remain straight in the fabric, i. e., they should be the warp. The yarn may be of non-inflammable material. The method of making the cloth is claimed also.

KNITTED BELTS. Knitted article of apparel and fabric therefor. Nathan Levin. USP 2 384 934, September 18, 1945. Belts, suspenders, and other articles of clothing subject to lengthwise strain, are made from one or more separate lengths of flattened, tubular, knitted fabric. The fabric has "a plurality of walewise extending wrap threads individual to the wales and plated thereon in substantially all of the wales and all of the courses comprising one face of the fabric for substantially the full length thereof, the said face of the fabric having a lesser number of wales than the opposite face thereof, each of said lengths of tubular fabric including the wrap threads being under walewise tension substantially throughout the full length thereof during the wearing of the article, the walewise lengthening and the coursewise contraction under the said tension being limited by the said wrap threads".

INSULATING TAPE. Pressure-sensitive adhesive sheets. Warner Eustis and George Robert Orrill (to The Kendall Co., Inc.). USP 2 385 319, September 18, 1945. A pressure-sensitive adhesive tape comprises a flexible backing having on one side an exposed coating of tacky, stable, pressure-sensitive adhesive. The other side is dry. The adhesive coating is firmly bonded to the flexible backing to allow rolling and unrolling of the tape on its dry back surface without detrimental picking of the adhesive while it is tacky. The adhesive coating contains a rubber-resin mixture and vulcanizing ingredients, including a thiuram polysulfide, the latter compounded in proportions to be inactive at ordinary temperatures. At the proper elevated temperature the mixture is vulcanized to set the adhesive into a firm, permanently non-tacky condition.

FABRIC. Ezekiel J. Jacob (to Benjamin Liebowitz). USP 2 385 577, September 25, 1945. A multi-ply fabric is composed "of at least two fabric plies consisting each of glass filament yarn and of parallel thin metallic wires incorporated in one of said fabric plies spaced apart from each other". Single-ply fabric composed of glass-filament yarns and of uncovered thin metallic wires is claimed also. The fabrics are said to be suitable for electric heating pads, aviators' costumes, heated blankets, and fireplace screens.

CUSHION. Walter B. Lashar and Richard F. Warren, Jr. USP 2 385 870, October 2, 1945. Mattresses, cushions, pads, and pillows have a body comprising a shaped pad of resilient fibers of synthetic thermoplastic. The pad has a "substantial" thickness. The fibers are "in substantially uniform proximity throughout said pad whereby the latter is of substantially uniform density", and are fused to one another in restricted zones extending through spaced portions of the pad to producing tufting. The fibers between the fused zones are "loosely related for relative movements as the pad is compressed and expanded under weight and when the weight is released".

TAPE. Tape and method of reinforcing. Henry J. Stuart (to I. Newman & Sons, Inc.). USP 2 387 416, October 23, 1945. A woven tape containing openings made by spreading the fabric is impregnated with cement immediately around the openings, and hooks are fastened to the tape through the openings. The cement is of the sort not affected by temperatures normally employed in ironing fabrics.

FABRIC. Rose D. Shank. USP 2 387 620, October 23, 1945. A fabric comprises "a multiplicity of medallions, yarn joining said medallions one to another according to a pattern, said medallions comprising a stiff annular disc, yarn annularly covering said disc and yarn crocheted into and around said first mentioned yarn".

KNITTED GOODS. Frank Headon. USP 2 388 144, October 30, 1945. A non-run, knitted textile fabric comprises wales and courses of interconnected loops of a thermoplastic yarn in which "the yarn is united with itself at certain points of crossing of certain adjacent loops, said points being arranged in parallel diagonal lines each intersecting a plurality of wales and courses in the same walewise zone, and in an adjacent walewise zone having loops similarly united at certain of their points of crossing but on diagonal lines at an angle to those of the first-named zone, each of said last-named lines terminating at the junction of said zones midway between the ends of a pair of said first-named lines, whereby runs are arrested in all of the wales while the fabric retains its elasticity in the areas between successive parallel lines".

STOCKING TOP. Increased clinging of stocking top. Scott & Williams, Inc. Brit. P. 568 233. A stocking top of enhanced clinging power is made of not more than two courses, having all the stitches drawn to one side interknit in repeated occurrence with an equal or greater number of rib courses. The courses having the greater number of plain stitches form rows of spaced protuberances on the back of the fabric.

UPHOLSTERY MANUFACTURE. Upholstery and mattress manufacture. Isaac Gotleib. Can. P. 430 873, October 30, 1945. In the manufacture of upholstery, mattresses, etc., the first covering for the springs comprises a layer of woven coir matting.

ELECTRICALLY CONDUCTIVE FABRIC. Seth Adamson (to Dominion Rubber Co., Ltd.). Can. P. 430 916, October 30, 1945. A woven, electrically heated, elastic fabric with an elastic stretch is formed of interwoven textile and elastic threads; and, woven in the fabric at spaced intervals as warp or weft, heating conductors that normally are held by the fabric weave in a crimped condition so that they can straighten out at least 25% as the fabric is stretched. Conductor leads extend across and contact the heating conductors for supplying an electric current.

V, 8. Applications: nontextile uses of fabrics

FILTER MEDIUM. Method of producing a filter medium. Alfred M. Goodloe (to Metal Textile Corp.). USP 2 382 560, August 14, 1945. A method of producing a filter medium from a tubular knit-metallic mesh body comprises first flattening the body to produce a two-ply strip, the plies of which are contiguously superposed; then passing the flat two-ply strip through the nip of a pair of corrugating rolls adapted to form corrugations across the width of the strip; and finally passing the corrugated strip through a flattened tubular jig. The jig has a passage tapered in width from its receiving end, which is somewhat wider than the initial width of the corrugated strip, to its discharge end, which is appreciably narrower than the initial strip; and the jig is only slightly higher than the overall thickness of the corrugated two-ply strip. In the jig, the mesh strip is transversely contracted to displace hump bends in the metallic strands of one ply laterally relative to the contiguous hump bends in the metallic strand of the other ply of the corrugated strip, and to cross and mutually interlock the respective hump bends in staggered non-parallel nesting relation.

ABRASIVE. Sheeted abrasive article. Bert S. Cross (to Minnesota Mining & Manufacturing Co.). USP 2 386 780, October 16, 1945. Can. P. 430 553, October 9, 1945, apparently corresponds. Claim is made to "an abrasive article" in which there is "a flexible backing having a plurality of plies [of fabric sheeting] an outer ply being unsized when the backing is originally formed and

having inner plies of a lesser degree of absorbency, determined independently, during the sheet forming stages of the manufacture of said inner plies, said outer ply being treated with a penetrative adhesive for increasing the adhesion between the plies, and a penetrative binder layer having an abrasive material applied to said outer ply resulting in a predetermined integration and flexibility of the composite."

FUEL TANK. Self-sealing fuel tank. Eric Victor Giles (to Hunt & Winterbotham, Ltd.). Can. P. 430 530, October 9, 1945. A self-sealing fuel tank for vehicles has a skin consisting of milled, woven, all-wool cloth. Several plies of cloth assembled on the bias and bonded with plastic are claimed also, but the interior of the fabric is free of plastic.

FILTERING APPARATUS. Henry R. Black (to Fiberglas Canada, Ltd.). Can. P. 430 919, October 30, 1945. Apparatus for filtering solid particles from fluids comprises a filter bag of woven cloth, one of whose ends is mounted for oscillitory movement relative to its support; means for conducting fluid to be filtered into the bag to cause solid particles to be deposited on the inside of the bag; continuously acting, reversible, power-actuating means; and a continuous drive connection between the power-actuating means and the one end of the bag for "positively angularly moving said end of said bag relatively to the other end alternately in opposite directions, thereby causing the threads of the cloth of the bag to be moved relatively to each other to loosen the deposited solid particles from the interior of the bag".

V, 8b. Coated or impregnated products

FRICTION ELEMENTS. Mortimer T. Harvey (to Harvel Research Corp.). USP 2 383 790, August 28, 1945. A brake lining comprises asbestos, organic friction material, and a phenol-aldehyde resin binder. The organic friction material comprises comminuted particles of the solid infusible product formed by condensation in the presence of an acidic catalyst of formaldehyde and furfuryl alcohol or furfuraldehyde.

ENDLESS BELTS. Method of manufacturing endless power-transmission belts. Burt W. Wetherbee (to Globe Woven Belting Co., Inc.). USP 2 386 761, October 16, 1945. A method of preparing a woven fabric-tube section for the manufacture of endless belts includes immersion of the tube in an aqueous dispersion of rubber containing a vulcanizing agent, drying it without substantial stretching until the water content remaining does not exceed 28% of the weight of the tube plus rubber, stretching the tube section while it contains this amount of water, and drying the tube still further while it is stretched. The weight of rubber in the finished tube equals twice the weight of the fabric. The fabric when removed from the impregnating bath contains 139% water, based on the dry weight of the fabric and the solids originally present in the water. When the water content is reduced to 28% "syneresis of the rubber particles approaches a plastic-coagulum stage". Stretching the tube section at this stage straightens and elongates the filler elements with the transfer of the crimp to the warp elements, orientation of the threads of the filler elements into "linear parallelism", compression of the fibers of the filler, and an increase in the degree of mutual separation of the warp elements.

COATED FABRIC. Coated fabric material. William D. Hedges, John C. Lowman, and Thomas J. Kerr (to Columbus Coated Fabrics Corp.). USP 2 387 394-5, October 23, 1945. A coated product comprising a flexible base and a coating on it is "characterized by the fact that it will retain its pliability and flexibility at extremely low temperatures, that the coating thereon will not soften or exude at temperatures of from 185 to 200°F. and will not crack or spew when subjected to weathering". The coating comprises a nitrocellulose film-forming constituent and a plasticizer formed by the reaction for 14 hours at 230°C. of 800 parts by weight of castor oil, 50 parts of maleic anhydride, and 26 parts of diethylene glycol. The acid number of this product is about 9. USP 2 387 395, claims a similar composition containing pigment for use as patent leather.

UPHOLSTERING FABRIC. William D. Hedges, John C. Lowman, and Thomas J. Kerr (to Columbus Coated Fabrics Corp.). USP 2 387 396, October 23, 1945. Coated upholstery material comprises fabric with a flexible coating consisting of the evaporation residue of a mixture of 10 parts by weight nitrocellulose; 16 parts of a plasticizing resin formed by the condensation of 800 parts castor oil, 50 parts maleic anhydride, and 26 parts glycol; 7.5 parts a condensation product made of 1000 to 1200 parts castor oil, 26 parts diethylene glycol and 50 parts maleic anhydride; 7.5 parts pigment; and 40 parts solvent.

VAMP PAD. Leo Morley Schacter. Can. P. 430 888, October 30, 1945. Claim is made to "a pad, made up of a material, as for example duck, which has been coated with a rubber or a rubber-like material (like vinylite q) or any other flexible, waterproof and non-cracking material, or a pad made of any material which has been rendered flexible, waterproof and non-cracking laced, built in, or sewn into the shoe beneath the vamp and instep, at position of flaps—body being held loosely in place—for the purpose of eliminating the cracking of the upper leather of the shoe, and also to prevent tearing of vamp lining, by preventing the perspiration of the foot from reaching and being absorbed by the upper leather and vamp lining".

V, 8c. Laminates

FABRICS FOR LAMINATES. Ralph N.

Prince and Joseph Seiberlich, Engineering Experiment Station, University of New Hampshire. *Modern Plastics 22,* No. 12, 51-6, 64 (August 1945). A study of the effects of the type fabric used in making laminates on the properties of the finished material covered fabrics made in seven different styles and variously finished, impregnated with Bakelite BV-16238 clear plus 2% of akaline catalyst, XK-16253. Effects of fabric construction, finishing, initial moisture content, and tensile strength were investigated. It was concluded that: (a) loosely woven fabrics pick up a little more resin than others, but they are too difficult to handle to be of interest, and tightly woven fabrics pick up 6-10% less; (b) grey and sanforized goods retain about the same amounts of resin, but mercerized goods retain less than all others; (c) all the fabrics swell when impregnated—those made from 2-ply yarns the most and those which have been mercerized the least; (d) tensile strengths of the fabrics increase on impregnation and decrease slightly on aging by heat; (e) there is little difference in the final strength between grey and sanforized goods; (f) multi-ply laminates have tensile strengths roughly multiples of those of single ply laminates; (g) 50% of the total amount of water absorbed by laminates is absorbed during the first half hour of exposure; (h) starch sizing causes higher-than-normal water absorption, and dewaxing causes still higher absorption; (i) preshrunk fabrics withstand drawing to a greater extent than unshrunk goods—in general, the degree and manner of shrinkage determine the character and amount of draw obtainable from a given fabric; (j) laminates made from fabrics woven from single-ply yarns warp badly, while those made from 2-ply yarns do not; (k) there appears to be no connection between cloth construction and fabric pretreatment or water absorption; and (l) water and aging increase, but do not cause, warping. Some of the above results are attributed to the fact that the resin solution used has a pH of about 10.

MOLDED OGIVES. Molded ogives for navy projectiles. F. B. Stanley. *Modern Plastics 22,* No. 12, 31-5 (August 1945). An illustrated account is given of the methods adopted by various molders for making MK-29 and MK-30 ogives for U. S. Navy projectiles. The former are made by laminating cotton duck impregnated with resin and the latter by molding helmet-liner scrap. Resin-treated creped cloth has been used successfully in the manufacture of both.

NYLON ARMOR. Nylon armor protects navy plane crews. Robert Temple, U. S. Navy, Bureau of Aeronautics. *Modern Plastics 22,* No. 12, 9-10 (August 1945). Nylon flexible flak vests and flak curtains, developed by the Naval Research Laboratory and E. I. du Pont de Nemours & Co., Inc., for protecting navy fliers are described with the aid of photographs. The vests are made in three pieces—front, back, and apron—and weigh 18 lb. They contain 32 plies of nylon woven from 210/34 yarn having a minimum of 7 gm. per denier strength in a two by two basket weave, or from yarn having a minimum of 8 gm. per denier strength in a four by four basket weave. The flak curtains are 24 by 48 in., weigh 10 lb. and contain 15 nylon plies, quilted to hold them together. Neither the armor nor the curtains protect against small caliber bullets and armor-piercing bullets. Experiments are being made on nylon fabrics laminated with nylon and other resins in the hopes of developing materials for protective panels or for such compound shapes as helmets.

IMPREGNATING WEBS. Apparatus for impregnating webs. Leonard E. Hahn (to Certain-Teed Products Corp.). USP 2 385 916, October 2, 1945. Apparatus for impregnating long, felted, fibrous webs comprises means for moving the web in the direction of its length, means for completely filling the structure of the web with impregnating material at an elevated temperature and for providing on the faces of the web as it travels layers of impregnating material in addition to that initially carried by the hot impregnated web, means for sealing the coatings to the faces of the web, means for passing the web through a cooling zone between the impregnating and sealing steps, and means controlling the amount of impregnated material absorbed by the felted structure of the web in its travel through the cooling zone to the amount that will just completely fill the felted structure at the temperature of the impregnating material on the web when it reaches the means for applying the sealing coats.

VI. FINISHING

BLOTCH PATTERNS. Enzymes in printing improve blotch patterns. T. N. Patrick. *Textile World 95,* No. 6, 145, 198, 200, 202, 204 (June 1945). In cases where starch has to be removed completely before printing with vat dyes in blotch styles and in cases where better fastness and hand are obtained by desizing after printing, diastatic and pancreatic enzymes capable of working rapidly at temperatures of about 140°F. are recommended. Exact conditions are stated for treating cottons and rayons before printing and for treating variously dyed fabrics after printing. An editor's note at the end quotes "the superintendent of a large print works" to whom the manuscript was shown as saying, "Starch-removing enzymes do not have a wide application in American printing. In preparation, . . . the regular kier-boil process has been adequate . . . After printing, the enzyme requires too much time . . . to produce . . . low-cost volume lines of print cloth . . . Unless complete removal of starch is demanded, the finisher of the standard print cloths overcomes the stiffness of the printing thickener by oil emulsions and mechanical breaking and calendering."

FINISHING FABRICS. Postwar possibilities in finishing fabrics. H. C. Borghetty, General Dye-

stuff Corp. *Am. Dyestuff Reptr. 34,* P364-6, disc. P366 (September 10, 1945). The war has given the finishing industry information on the behavior of fabrics variously finished under "the most adverse conditions from pole to equator" and "has compelled many mills to become familiar with intricate finishing operations which were formerly carried out only in a few well-equipped, well-staffed plants." Finishes developed for military fabrics are reviewed briefly to prove that a wide variety of cheap, reliable, non-poisonous, permanent finishes for cotton and rayon are available already. It is predicted that "post-war fabrics will be permanently finished."

pH *CONTROL.* pH control in dyeing processes. Edgar I. Noble, Sandoz, Ltd. *Am. Dyestuff Reptr. 34,* 359-62, 367-70 (September 10, 1945). pH must be controlled within close limits during the scouring, bleaching, dyeing, and shrinkproofing of wool. The optimum pH for one of these processes may be quite different from that for another, and since it is difficult to distribute acid or alkali perfectly evenly through wool, buffer solutions should be employed. This point is made with the aid of two tables showing (a) the pH at the start and during cold and hot dyeing, and the percentage exhaustion of the dyebath, when dyeing wool with Brilliant Alizarine Sky Blue BS Pat. in baths whose pH was regulated with different acids and with buffers; and (b) the pH of exhausted dyebaths containing seven different buffer salts and used for dyeing wool by various common methods. An additional table lists the results of parallel dyeings with 20 dyes, usually at more than one concentration, using monoammonium phosphate and ammonium sulfate as the buffers. Formulas for large-scale dyebaths and for a shrinking bath are included. It is claimed that mixtures of phosphoric acid and ammonia are the most convenient of all the buffers available to wool-finishers.

PAPAIN. The potentialities of papain in the textile industry. J. Wakelin. *Am. Dyestuff Reptr. 34,* 371-2 (September 10, 1945). Papain can be used for stripping albumen-fixed dyes from textiles (Brit. P. 468, 154), for helping to wash any sort of soiled fabric (Brit. P. 475, 880), to make wool non-felting (Brit. P. 513, 919), and to make chlorinated wool have the appearance and feel of silk (Brit. P. 546, 915). Extensive abstracts are given of these patents.

SOFT RAYONS. The softening and lubrication of rayon fabrics. Robert R. Ackley, Onyx Oil and Chemical Co. Fellow at Mellon Institute. *Am. Dyestuff Reptr. 34,* P348-50 (August 27, 1945). Agents for softening rayons are the substantive cationic agents and the fugitive textile aids. The latter, like mechanical working to produce softness, are relatively unsatisfactory because their effects disappear after cleaning and washing. Cationic agents may be applied alone or in emulsions stabilized by them of resins or other finishing agents. Up to a certain maximum concentration they improve

the hand of the fabric on which they are used, but after that they improve it to a smaller extent. Up to a certain maximum concentration, beyond which there is no further change, they improve the smoothness of the fabric. Data are tabulated and graphed to prove these points. Some cationic agents are bactericidal and fungicidal. Others increase or decrease the ability of fabrics treated with them to be wetted. Synthetic rubbers, and fulling, dulling, and fireproofing agents can be incorporated with them.

BOARDING FORM. Garment treating form. Roy Mittelstadt (to Paramount Textile Machinery Co., Inc.). USP 2 383 011, August 21, 1945. A form for boarding stockings includes in combination a hollow form, over which the stocking is stretched, and an inner rib of flexible, stranded, metallic cable. The rib is "adapted to control the inner surfaces of the said structure over substantially the entire length of said rib."

SETTING FABRICS. Textile article processing. George E. Dunn (to Paramount Textile Machinery Co.). Can. P. 430 939, October 30, 1945. Fabric articles made from "a yarn essentially a synthetic linear condensation polyamide" are set immediately after their primary fabrication, i. e., before treatment with any hot liquid such as dye liquor, by suspending them freely by a clamping means that allows them to retain their natural loose folds and configurations in an aqueous setting medium.

VI, 1. Preparation

VI, 1d. Drying and conditioning

DIELECTRIC HEATING. Some limitations of dielectric heating. Carl J. Madsen, Westinghouse Electric Corp. *Elec. World 124,* No. 11, 94-5 (September 15, 1945). Dielectric heating can be used only if the material to be heated has a resistivity greater than 1000 ohm-cm. and a loss factor above 0.005 to 0.01. It costs 2.5 to 4¢ per kw.-hr. so that it is economical only if it accomplishes results not possible by other methods of heating, speeds the process or saves labor or cheapens the over-all cost of equipment, etc. It is hard to apply to material of irregular dimensions. The length of material heated must be such that standing waves are avoided. The total voltage applied has to be under 15,000 volts to avoid corona and arc-over, and below the voltage that will produce a voltage gradient large enough to produce punctures. Often the electrodes have to be shielded from the material.

DRIER. John Robert French. USP 2 384 990, September 18, 1945. A drier comprising a housing with a passageway through it for moving cloth and the like through the drier is divided into compartments by slotted U-shaped members and into sub-compartments by means of plates; and is provided with means for forcing vapor through all the compartments, and for withdrawing vapor from the last compartment and conducting it back to the

first compartment and through all the compartments again in an endless series.

TENTERING MACHINE. Tentering machine speed control. Adolph W. Kuzinski. USP 2 387 333, October 23, 1945. Claim is made to a circuit for automatically controlling the speed of an electrically driven tentering machine, for indicating to the operator "certain conditions incident to . . . normal operation," such as the approach of the end of a piece being tentered, and for controlling such intermittent operations as steaming.

WEB DRIER. Milton E. Hanson (to B. F. Sturtevant Co.). USP 2 388 226, October 30, 1945. In a tenter frame-web drier having a housing containing spaced conveyors for carrying the web to be dried through the drier, rails for supporting the conveyors, and a base for supporting the rails and on which they slide, claim is made to the combination of a pair of spaced, horizontal baffles under the base; an air seal between the rails and baffles; an air heater under one of the baffles; a fan under one of the baffles; and means forming an air passage including the web, the space between the baffles, the heater, and the fan in series. The fan recirculates air through this passage.

STRETCH INDICATORS. Stretch and shrinkage indicators on tentering frames. C. P. Porritt (to Porritt & Spencer, Ltd.). Brit. P. 567 784. In a device for indicating stretch or shrinkage in running webs of cloth, the cloth is passed over a measuring roller, over swivel rolls, the tension being adjustable by a handwheel, over a drag roller driven by a worm wheel through an adjustable variable speed transmission from a shaft, and over a second drag roller driven by gearing before passing to automatic guide means leading to the tentering machine. The front tenter roller drives, by a chain on a sprocket, on an indicating clock, the sprocket driving through bevel gearing the spindle of a pointer passing over the face of the clock. A second drive is taken from the measuring roller to a sprocket that drives through bevel gearing a wheel which is connected through gearing with the spindle of a second pointer. The two drives are such that when the web passing over the measuring roller and the web passing over the front tenter roller are travelling at identical peripheral speeds, the two pointers will be coincident. An operator can, therefore, if these pointers vary in their relative positions, bring the stretch back to the predetermined amount by adjusting the variable speed gear. A further pointer may be provided to cooperate with another scale for giving the total yardage passing over the measuring roller.

VI, 6. Sizing and finishing

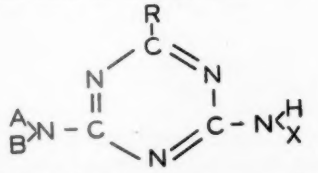
COATING TEXTILES. Machines and techniques vary with plastic coatings. John B. Cleaveland. *Textile World 95,* No. 6, 117, 119, 194, 196, 198 (June 1945). Plastics are applied to textiles from solution by means of knife-spreaders and roll coaters, and as thin coats by calenders. The particular machine and method chosen depends on the amount of material to be coated, the nature of the plastic, and the thickness and character desired in the final film. Thus, only rubber-like materials can be applied by calenders; knife-spreaders give very thin films; etc. A lengthy discussion is given limitations and advantages of each machine, and the nature of the coating produced is indicated. The illustrations show each of the machines: a light-weight, plain-woven fabric coated with resin and printed; and a Schiffli lace made with a film base dissolved in hot water when the base is finished.

COATING FABRICS. Fabric coating machine. Francis B. Quinn and Robert G. Levitch (to Bigelow-Sanford Carpet Co., Inc.). USP 2 384 695, September 11, 1945. A fabric-coating machine has in combination a chamber open at the top and bottom with vertical sides, two sets of burnishing rolls, a tank below the chamber for a rubber solution, a roll dipping into the tank, means to guide the incoming dry fabric against the sides of the rolls of one set (with which sides the wet fabric does not contact), and means to guide the wet fabric against the opposite sides of the rolls and against the other set of rolls in the chamber. The burnishing rolls rotate with a surface speed of 15-30 feet per second, and the rolls in each set are in alignment with each other.

SIZE. Sizing and finishing compositions. Fred G. La Piana and Herman S. Bosland (to Stein, Hall & Co., Inc.). USP 2 385 714, September 25, 1945. Textiles are made permanently crisp and shrinkproof by treating them with a composition comprising at least 50% of an "amylaceous substance", at least 5% of a water-soluble urea-aldehyde resin, and at least 5% of a water-soluble "polyvinyl composition containing polyvinyl alcohol as the major ingredient".

TEXTILE FINISHING. Jack T. Thurston (to American Cyanamid Co., Inc.). USP 2 385 765, September 25, 1945. A method of finishing textiles comprises the step of applying to them a finishing agent containing an aldehyde-condensation product of a water-insoluble guanamine and then heating the textiles to dry and set the finish on the fibers. The guanamine contains an aliphatic or a cycloaliphatic radical of at least seven carbon atoms attached directly to the 2-carbon atom.

TEXTILE FINISHING. Guanamines in textile finishing. Jack T. Thurston (to American Cyanamid Co., Inc.). USP 2 385 766, September 25, 1945. Textiles are finished by applying to them a formaldehyde condensation product of an N-substituted guanamine of the formula



in which R is hydrogen or a monovalent, carbon-

containing radical connected to the 2-carbon atom of the amino-triazine nucleus by a carbon-to-carbon bond; *A* and *B* are hydrogen or monovalent "substitutes for hydrogen"; and *X* is an aliphatic, cycloaliphatic, or mononuclear aromatic radical. At least seven carbon atoms are contained in all in the groups *K, X, A,* and *B*. Heat is used to cure the guanamine-formaldehyde condensation product on the textile.

TREATING COATINGS. Method of treating strand materials. Charles C. Smith (to Western Electric Co., Inc.). USP 2 386 148, October 2, 1945. Strands of material of a given color, e. g., electric cable, and having a cellulose acetate coating made undesirably rough and opaque by excessive drying are passed through a bath of mineral oil that is absorbed into the coating to render the coating smooth and transparent to a desirable degree. The excess oil is wiped off.

FINISHING TEXTILES. Textile finishing process. Worth Wade (to Sylvania Industrial Corp.). Can. P. 430 697, October 16, 1945. Textiles are sized by applying a preformed film of thermoplastic material on one surface, and melting the sheet with heat and pressure, so that the film flows into the fabric. After the application of heat and pressure, the fabric is non-tacky and the thermoplastic material is present in the fabric in a discontinuous form.

VII. COLOR

TREATING NYLON. Pre-dyeing treatment for nylon. R. P. Foulds, W. H. Roscoe, and W. H. Watson (to Tootal Broadhurst Lee Co., Ltd.). Brit. P. 568 092. Prior to dyeing, nylon is treated with a solution of a strong acid of such concentration that the material becomes capable of being dyed deeper, but is not delustered. Specific claim is made of sulfuric acid of 42 to 47° Tw., hydrochloric acid of 14 to 16°Tw., nitric acid of 25.5 to 30°Tw., orthophosphoric acid of 10 to 12 volumes of acid of 1.75 sp. gr. to 12 volumes of water, and formic acid of at least 65 volumes of acid of 1.2 sp. gr. to 35 volumes of water but less strong than 80 volumes of acid of 1.2 sp. gr. to 20 volumes of water.

FINISHING CELLULOSE ACETATE. Delustering and colouring acetate in tertiary shades. H. C. Olpin and S. A. Gibson (to British Celanese Ltd.). Brit. P. 568 438. Cellulose acetate fibers are delustered and colored in full tertiary shades by causing the material to absorb in finely divided form a water-insoluble condensation product of an aldehyde and an organic base containing a number of basic amino groups, from a dispersion of the condensation product, and then dyeing in full tertiary shades.

VII, 1. Bleaching

HYDROGEN PEROXIDE. Concentrated hydrogen peroxide. L. M. White. *Chem. Eng. News 23,* 1626 (September 25, 1945). The Germans developed a method for making stable, very pure solutions containing 82-85% hydrogen peroxide for

use in rocket motors. The method is explained briefly here and in more detail in *Ibid.* 1519 (September 10, 1945). During peacetime "this material may . . . prove to be a valuable new chemical tool".

STRIPPING. Notes on the stripping of dyed textile material. J. Wakelin. *Am. Dyestuff Reptr. 34,* 370-1 (September 10, 1945). A brief survey of the subject of removing or partially stripping colors from textiles mentions bleaches for acid dyes on wool, direct colors on vegetable fibers, azo colors (Brit. P.'s 400, 239 and 436, 076), vat dyes (Brit. P.'s 409,336 and 422,466), and dyes on acetate rayon (Brit. P. 513, 077). Hydrogen carriers, e. g. anthraquinone and sodium anthraquinone sulfonate (the latter covered by Brit. P. 548, 558), are good assistants for stripping. Papain can be used to strip colors fixed with albumen.

BLEACHING TEXTILES. Treatment of cellulosic textile materials. George P. Vincent, Archie Louis Dubeau, and John Francis Synan (to The Mathieson Alkali Works, Inc.). USP 2 383 900, August 28, 1945. Such cellulosic textiles as cotton, synthetic cellulosic fibers, and rayon can be bleached without forming oxycellulose by treating the material with an alkaline solution of a hypochlorite, an alkali metal chlorite, and a detergent, at a temperature not exceeding 120°F., for a period of time sufficient to bleach the textile and exhaust the hypochlorite in the solution, followed by raising the temperature to 200° and continuing the treatment for a long enough time to scour the textile.

KIER PILER. Robert W. Vose (to Chicopee Manufacturing Corp.). USP 2 386 371, October 9, 1945. A kier piler has a rotatable drum; means for feeding fabric to and around the drum; a transfer roll for offsetting the fabric as it passes around the drum; a tangent roll movable about the lower portion of the periphery of the drum, and holding the fabric in contact with the drum and controlling its point of exit from the drum; and means for continuously varying the position of the tangent roll about the periphery of the drum to pile fabric fed to the drum evenly in the kier.

VII, 2. Dyeing

ACID DYES. The absorption of acid dyes by wool, silk, casein fibre and nylon. B. G. Skinner and T. Vickerstaff, Imperial Chemical Industries, Ltd. *J. Soc. Dyers & Colourists 61,* 193-201 (August 1945). "Isotherms for the absorption of three acid dyes of different types on wool, silk, casein fibre and nylon have been determined at several pH values. The results may be fitted by the Langmuir adsorption equation at high concentrations, but at low concentrations a departure . . . is observed, from which it is inferred that the dyeing mechanism is more complex than simple salt formation. At high acidities, hydrolysis of wool occurs during dyeing, leading to increased dye absorption. The degree of hydrolysis is not increased in presence of dye. The amount of a typical colloidal dye absorbed is

not in excess of the total number of basic groups present, provided that it is assumed that each amino-group in the fibre can combine with one dye molecule . . . At very high concentrations of dye in the wool fibre, severe tendering takes place . . . The absorption isotherms of wool and casein fibre are almost identical . . . and the observed differences in rate of dyeing and wet fastness must be attributed to differences in physical structure. The dyeing mechanism with nylon appears to be similar to that of wool . . ."

DYEING. The Mettler full-width dyeing machine. Anon. *Indian Textile J. 55,* 730-31 (July 1945). Machinery invented by H. W. Mettler and licensed by Sulzer Brothers, Switzerland, for full-width bleaching, washing, and dyeing of silk, rayons, and mixed weaves is successful because the fabric is not subject to tension in being wound on the collecting roller. The machines are made in two sizes, the smaller where the fabric is led through the bath from one roller to the other, and the larger where a conveying roller is fitted between the two winding rollers. The smaller machine is illustrated.

DYEING CELLULOSE. The dyeing of cellulose with direct dyes. IV. The electrolytic conductance of aqueous solutions of direct dyes. Frank H. Holmes and H. Alan Standing, British Cotton Industry Research Association. *Trans. Faraday Society 41,* 568-74 (August-September 1945). The electrolytic conductance of Chrysophenine G (Color Index 365), Direct Fast Orange SE (Color Index 326) and Chlorazol Sky Blue FF (Color Index 518) were determined at concentrations between 0.05 and 4.0 g. per liter at 20 and 98°C. for Chrysophenine G, 20 and 60° for Direct Fast Orange SE, and 20° for Chlorazol Sky Blue FF. From the results the aggregation numbers were calculated by a "method resembling that used by Robinson and Garrett" *Ibid. 35,* 771 (1939), "but differing from it in some particulars; the results obtained show that none of these dyes can be considerably aggregated in aqueous solution free from any other electrolyte unless their micelles contain a large proportion of cations". The results are both tabulated and graphed.

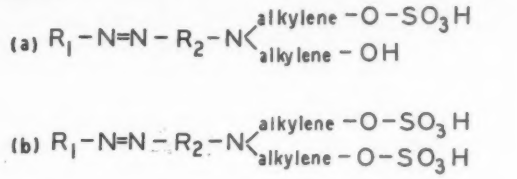
KIER-WASTE LIQUOR. The kier-waste liquor. A. M. Patel, Mafatal Gagalbhai Mills. *Indian Textile J. 55,* 622-4 (June 1945). Waste liquor from kiers in which grey goods have been boiled out can be used as a levelling agent in package dyeing in place of glue and of expensive surface-active agents, such as Dekol, Levelliser DK, etc. Between 10 and 15 gallons of clear, supernatant kier liquor of 1.5-2.0 Tw. are added for each 100 gallons of dye. If the water is hard, more kier-waste liquor is employed. The composition and significant properties of the liquor are touched on. In using this process for the three months before this article was written the Mafatal Gagalbhai Mills are said to have saved "thousands of rupees".

METACHROMASY. Metachromasy of basic dyestuffs. L. Michaelis and S. Granick, Rockefeller Institute for Medical Research. *J. Am. Chem. Soc. 67,* 1212-9 (July 1945). Many basic dyes are absorbed by stainable substrates in two different shades, regardless of pH. These shades are termed normal and metachromatic. By use as model substrates of a 3% solution of nucleic acid at pH 4.6 and a solution of gel or agar at pH 4.6, which stain in normal and metachromatic colors, respectively, spectrophotometric measurements of the absorption curves were made for methylene, toluidine, and capri blue; oxonine; crystal violet; fuchsine; phenosafranine; and thionine. "All dyestuffs capable of metachromasy disobey Beer's law in aqueous solution, due to the fact that with increasing concentration dimeric molecular aggregates of the dye molecules are formed . . . In the presence of agar still higher molecular aggregates are formed . . . The absorption bands of these polymers are still further displaced toward shorter wave lengths [than those of the dimers] and are more difuse. In contrast, in the presence of nucleic acid the absorption spectrum of all basic dyes is independent of the concentration of the dye . . . No polymerization takes place . . . Very little is known about the correlation of the chemical structure of a dye with its faculty of polymerization. On the other hand, this faculty of polymerization is always correlated with the metachromatic effect."

PACKAGE DYEING. The package dyeing of narrow fabric: a link between yarn dyeing and piece dyeing. H. A. Thomas, Courtaulds, Ltd. *J. Soc. Dyers & Colourists 61,* 185-91, disc. 191-3 (August 1945). See also abstract of speech before Am. Assoc. Textile Technologists, *Fibre & Fabric 98,* 6 (September 29, 1945). In a speech made before the Manchester Section of the Society of Dyers & Colourists, September 15, 1944, dealing with various methods of dyeing narrow fabrics, special emphasis is placed on pressure-package dyeing in yarn-package dyeing equipment. Numerous examples are cited to show that the process is entirely satisfactory for most fabrics provided the rolls are loose. The many technical advantages of dyeing the finished fabric are discussed in detail, and the method by which the dye liquor moves through the rolls is considered. Courtaulds, Ltd., is claimed to have pressure dyed "many tons of rolls of cotton webbing with vat dyes", and to have had success with direct cotton dyes and Sulphur Black. Other sulfur dyes and azo dyes have given difficulties. Narrow fabrics also can be prepared and finished in roll form.

UNEVEN DYEING. Some causes of uneven dyeing. T. C. Hutchins. *Am. Dyestuff Reptr. 34,* 344-6 (August 27, 1945). The causes of uneven dyeing that are not the fault of the dyer are: non-uniformity of fabrics, uneven distribution of sizing, faulty singeing, incomplete scouring, uneven bleaching, and leaving of bleaching chemicals in the fabric. The non-uniformity of fabrics can arise from batch-to-batch differences in raw materials, and faults in spinning and weaving. Ways for the dyer to circumvent the difficulties mentioned above are discussed.

AZO DYES. Mixtures of azo dyestuffs. Friedrich Felix and Alphonse Heckendorn (to Society of Chemical Industry in Basle). USP 2 384 734, September 11, 1945. Claim is made to mixtures of dyes which in the free form correspond to the general formulas



in which the proportion of the monoester *(a)* to the diester *(b)* is such that in 100 parts of the dye mixture there are at least 50 parts of *a* and not more than 25 parts of *b*. In the formulas R_1 and R_2 "stand for aromatic nuclei of the benzene series which are free from hydroxyl, carboxyl and sulfonic acid groups". R_1 has a nitro-group para to the –N=N– group. The–N=N– group and the $-N(alkylene-)_2$ group of R_2 are in the 1:4 positions with respect to each other. The alkylene groups contain no more than four carbon atoms. Examples show the use of these mixed dyes for dyeing acetate rayon and nylon. A table lists the formulas of 10 diols and the colors they produce on acetate rayon when esterified with 1 to 1.3 moles of sulfonating agent.

DYEING WOOL. Method of dyeing woolen and other nitrogenous textile materials. Harold J. Walter (to Uxbridge Worsted Co., Inc.). USP 2 387 200, October 16, 1945. In a method of dyeing wool, nylon, silk, or other nitrogenous fibers, a length of the material is run in open width through a water solution of the dye heated above 212°F. under pressure greater than atmospheric to completely fix the dye on the material.

DYEING. Vinyl polymer dyeing. American Cyanamid Co. Brit. P. 568 037. Vinyl polymers are dyed in a bath containing an azo dye of the formula

$$Ar\text{--}N{=}N\text{–}B\text{–}N(X)(CH_2)_y\text{–}(OC_2H_4)_z\text{–}OR,$$

where *Ar* is a benzene or naphtholene radical, which may be substituted by non-water-solubulizing atoms or groups, such as alkyl, alkoxy, nitro, chlorine, etc., and combinations of them; *B* is a benzene or naphtholene radical, which may be substituted by the above non-water-solubulizing atoms or groups, or by acylamino groups; *X* is hydrogen, or an alkyl, aralkyl, alkoxy-alkyl or polyalkoxyalkyl radical; *y* is 2, 3, or 4 and *z* may be any whole number; and *R* is an alkyl radical.

THE DYEING OF NYLON TEXTILES. Imperial Chemical Industries (Dyestuffs), Ltd., London, England, n. d.; 66 pp.; gratis. Data are given on the dyeing properties of nylon for the common acetate wool and cotton dyes. Data on the fastness to light, water, etc., of the dyed cloth are given too. One chapter gives notes on the large-scale finishing of nylon goods.

VII, 2a. Direct

DIRECT COTTON DYES. The diamond jubilee of the discovery of direct cotton dyes. 1884-1944. C. M. Whittaker. *J. Soc. Dyers & Colourists 61,* 201-3 (August 1945). A brief history of the chief direct dyes for cotton, the first of which, Congo Red, was made in 1884 by Paul Böttiger, states, "It is scarcely flattering, either to the dye-users or to the dye-makers, that, in the Diamond Jubilee year of the discovery of direct cotton dyes, our Society should have a Committee in active session endeavouring to draw up standard methods for the classification of direct cotton dyes as regards compatibility, rate of dyeing and salt sensitivity."

DYEING CELLULOSE. The dyeing of cellulose with direct dyes. II. The absorption of chrysophenine by cellulose sheet. Hector F. Willis, John O. Warwicker, H. Alan Standing, and Alexander R. Urquhart, British Cotton Industry Research Association. *Trans. Faraday Society 41,* 506-41 (August-September 1945). The absorption isotherms of Chrysophenine G on purified cellulose sheet (Cellophane N600) were determined for concentrations of dye varying from 0.01 to about 0.8 g. per liter at 20, 40, 60, 80, and 97.5°C with varying amounts of sodium chloride; at 97.5° in the presence of sodium sulfate; and at 60 and 90° in the absence of added electrolyte. The results are plotted, discussed, and compared with the results that would be predicted by a new theory of dyeing, which is developed here on pp. 516-41. According to this theory, each dye molecule is held to the cellulose by means of two hydrogen bonds. In its present form, this new theory does not apply to dyes that aggregate in solution to form ionic micelles. "Nevertheless some of the theoretical conclusions are applicable . . . to the experimental data of Neale and his collaborators for Benzopurpurine 4B, Chlorazol Sky Blue FF, and Chlorazol Fast Red K . . ."

DYEING CELLULOSE. The dyeing of cellulose with direct dyes. III. The aqueous diffusion of direct dyes. Frank H. Holmes and H. Alan Standing, British Cotton Industry Research Association. *Trans. Faraday Society 41,* 542-67 (August-September 1945). The aqueous diffusion of two dyes, Chrysophenine G (Color Index 365) and Direct Fast Orange SE (Color Index 326), molecular weights of dye anions 634 and 710, respectively, was investigated at various temperatures and concentrations of electrolyte. The diffusion coefficients were then used to find the degree of aggregation of the dye anions. "The results obtained indicate that in the presence of excess electrolyte Chrysophenine is only slightly aggregated, whilst Direct Fast Orange is appreciably aggregated. It is also shown that equivalent concentrations of different electrolytes with univalent cations have approximately the same effect on the diffusion, but that a salt with a bivalent cation has a more pronounced effect. The 'mobilities' of the dye anions calculated from the diffusion coefficients obtained in the presence of another electrolyte are always greater than

those obtained from the conductivity measurements made on solutions of the pure dye. This discrepancy may be due to the inclusion of sodium ions in the anionic micelle to an increased degree of aggregation in the presence of the electrolyte, or both . . . At least for Direct Fast Orange at 25°C. . . . the effect is due mainly to increased aggregation."

VII, 2d. Printing

PRINTING JUTE. A new machine and a new method for printing on jute. Anon. *Jute & Canvas Review 17,* 5 (August 1945). John Chalmers of Edinburgh has invented and perfected a printing machine that can be used for printing on jute, canvas, linen, silk velvet, leather, sandpaper, and other rough surfaces. In the Chalmers process type or cuts produced by conventional methods are placed at the top of the machine. The image of the block is transferred to a composition roller and again to a flat composition pad. The image is offset from the pad on to whatever material is to be printed. The process is as rapid as ordinary letterpress printing, and has the following advantages: blocks and type need not be "made ready"; the blocks and type are only "kissed" lightly once by the composition roller when the first transfer of the image is made, so the originals do not wear down; and the results are perfect. Thick solids (books, glass, zinc, bricks) can be printed by slight alterations in the settings of the machine, and by other changes the blocks or type can be used for normal offset printing. Prints can be made from old, badly worn blocks, if desired.

PRINTING TEXTILES. Eliminating splashing & frothing damage in textile printing. "Technicus". *Can. Textile J. 62,* No. 16, 44, 46 (August 10, 1945); No. 20, 63-4 (October 5, 1945). Hints are given on methods of eliminating the damage caused by faulty printing paste used on roller, screen, or block printing equipment.

SCREEN PRINTING. Stabilized azoic colors in screen printing of rayons. Methods of development. I-II. "Technicus". *Rayon Textile Monthly 26,* 246-7 (May 1945) and 295-6 (June 1945). Directions are given for developing stabilized azo dyes in printing rayons by the screen method. The principal development methods are by air, neutral and acid steam, cold or boiling salt solutions, and Rapidogen Developer N.

PRINTING AIDS. Acyl quinone sulphonamides as printing aids. Roy H. Kienle and Chester A. Amick (to American Cyanamid Co., Inc.). USP 2 383 393, August 21, 1945. A printing paste or dye powder comprises a vat dye and a quinone-sulfonamide derivative of the general formula

$$Q(SO_2\text{–}R)_x,$$

where Q is a beta-naphthoquinonyl or an anthraquinonyl radical; R is an amide residue of an aliphatic monocarboxylic acid amide, of a monoamide of an aliphatic carboxylic acid containing 2 to 8 carbon atoms, of phthalimide, or of a monoamide of a cyclic-dicarboxylic acid; and x is 1 or 2.

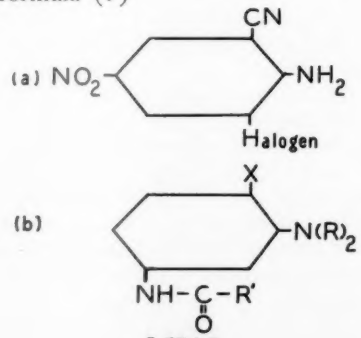
Claim is made also to the method of printing with a vat color of the above composition, and to the fabric so printed.

PRINTING COMPOSITION. Composition for printing flexible materials. Roy Herman Kienle and Alfred Louis Peiker (to American Cyanamid Co., Inc.). USP 2 383 937, September 4, 1945. A colored emulsion for printing flexible materials such as fabrics and fibers comprises a water-in-oil type of emulsion whose oil phase contains (a) at least one water-insoluble, organic, film-forming, thermosetting material, soluble in the solvent, and capable of rapid setting at moderate temperatures; and (b) at least one elastomer. The amount of thermosetting material is sufficient to produce an emulsion of printable consistency but insufficient materially to stiffen textiles colored with the emulsion, and insufficient to cause adhesion to the application machinery.

PRINTING. James Moore Lowe. USP 2 384 843, September 18, 1945. Can. P. 429 839, September 4, 1945 appears to correspond. A web of fabric is printed in a number of different colors by applying to several, non-continuous, horizontal, offset printing rolls "respective impressions to appear register in a pattern", placing one end of the fabric web in a horizontal plane parallel to the direction of travel of the rollers, causing relative movement between the rollers and the web to print a repeat, moving the web forward to a position for printing another repeat, and again passing the rollers over the web to apply another repeat in register with the first repeat, etc.

PRINTING COMPOSITION. Textile printing composition. St. Clair Smith. USP 2 385 737, September 25, 1945. A textile-printing composition, which is successful on greige goods, comprises a resinous binder dissolved in a volatile solvent, and 2-10% of a terpene ether. The terpene compounds in the composition consist essentially of the terpene ether.

DISCHARGE PRINTING. Discharge printing of cellulose acetate. George W. Seymour and Victor S. Salvin (to Celanese Corp. of America). USP 2 385 885, October 2, 1945. White discharge effects are printed on textiles dyed with an azo dye formed by diazotizing an amine of the general formula (*a*), and coupling the diazotized amine with a dihydroxyalkylamino compound having the general formula (*b*)



where R is a hydroxyalkyl group containing at least two carbon atoms, R' is an alkyl group, and X is hydrogen, alkyl, O-alkyl, or O-alkylene-OH. The discharge effects are secured by applying to the dyed material in a predetermined pattern "a discharge paste comprising a sulfoxylate formaldehyde discharge agent having an alkaline reaction".

PRINTING PASTES. Stabilization of coloring compositions containing diazonium salts. Frederic H. Adams, Hans Z. Lecher, and William B. Hardy (to American Cyanamid Corp.). USP 2 386 646, October 9, 1945. A printing paste containing a carbohydrate thickener and at least one water-soluble diazonium salt derived from an ice-color diazo component, is stabilized against thinning by a free nitrogenous base (or one of its salts) soluble in aqueous mineral acids and containing either one olefinic double bond or one acetylenic triple bond for 12 carbon atoms. The base is "free from constituents capable of azoic coupling, of condensation with the diazonium salt to form diazoamino or diazoamino compounds under acid conditions," and is unable to decompose the diazonium salt at room temperature.

SCREEN PRINTING. Arnold Eddy (½ to Hilda W. Striker). USP 2 387 984, October 30, 1945. Claim is made to a device for use in combination with a screen-printing table having a considerable length to hold the fabric to be printed to the upper surface of the printing table. This device comprises a carriage, means for moving the carriage on the upper surface of the table "in longitudinal direction and parallel thereto", means mounted on the carriage for applying during the movement a thin coating of adhesive to the table surface, at least one pressing roll to support the carriage and press against the table, means for rotatably supporting on the carriage a roll of the textile to be printed, and means for automatically guiding the carriage during its movement along the table. The adhesive-applying means is arranged at the part of the carriage which constitutes its front end when it is moving forward.

PRINTING APPARATUS. Silk screen printing apparatus. A. J. Roberts. Brit. P. 567 896. Claim is made to "a silk screen printing apparatus in which the squeegee carriage slides backwards and forwards on a runner frame carried by the screen frame. The two squeegees are carried by end brackets pivoted in the carriage and the carriage has a pair of pivoted handles for moving it across the screen. The end brackets are so coupled to the handles that, as the handles are moved from a pulling to a pushing position the brackets are swung about their pivots to position the squeegees in the desired way. It is unnecessary after each pass of the squeegee to throw the surplus ink over, as in the case of the usual apparatus."

DYEING MACHINE. Textile fabric dyeing machine. Alexander J. Belokopytoff (to Paul N. Robins). Can. P. 430 711, October 16, 1945. A machine for dyeing textiles comprises an endless belt, rollers movably supporting the belt, means for applying a layer of gelatinous solution to the belt, means to deposit drops of coloring solutions to the layer, several rakes with pins to touch the layer to oscillate the rakes with the pins to spread the drops into fancy patterns, means to adjust the amplitude of the oscillations, means of applying a fabric to the layer on the belt to transfer the pattern to the fabric, several rollers supporting the fabric beyond the belt, means to rotate the rollers to move the belt and fabric at the same speed, and means to remove the used layer from the belt.

VII, 4. Pigment coloring

FINISHING FABRICS. Finishing pigment-resin colored fabrics. Ralph D. Greene, Roy H. Kienle, and Richard D. Vartanian (to American Cyanamid Co., Inc.). USP 2 385 320, September 18, 1945. Pigment-printed fabrics, on which the pigment was deposited from an emulsion and to which the pigment is attached by a heat cured resinous binder of the alkyd or alkylated amine-aldehyde type, are finished by treating at least the portions colored by the pigment with a protective coating comprising an amide-aldehyde resin that has been etherified with a polyhydric alcohol.

VIII. PROOFING

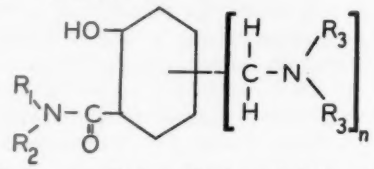
RUNPROOFING HOSE. Hosiery run inhibiting preparation. Frank F. Linstaedt. USP 2 384 382, September 4, 1945. A run-inhibiting preparation for sheer hose consists of zinc resinate, water, an organic, water-soluble solvent for the zinc resinate (isopropyl alcohol or acetone), and sufficient ammonia to convert the zinc resinate into a water-soluble complex. The preparation has "a run load characteristic of at least 2-½ pounds".

TREATING TEXTILES. Acid and water-resistant fibres. E. Bader. Brit. P. 568 181. The resistance of cotton, wool, jute, etc., to the effects of water, acids, solvents, and "corrosion" is improved by treating them with a "sulphurized fatty oil reaction product", soluble in organic solvents.

VIII, 1. Waterproofing; weatherproofing; moistureproofing

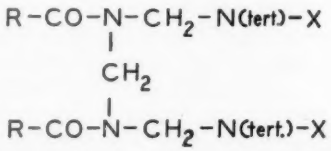
WET-STRENGTH PAPERS. Resin-bonded, wet-strength papers. Anon. *Technical News Bull. Nat'l. Bureau of Standards* No. 341, 70 (September 1945). A publication by C. G. Weber for *Printing Equipment Engineer* states that "resins have been used to give paper better resistance when wet than was heretofore possible. Papers are now being produced that can be successfully laundered with hot water and soap or cleaned in gasoline or other solvents after having been smeared with mud or oil and grease."

WATER REPELLENTS. Amino-methylene derivatives of salicylamide and process therefor. Donald Price and Rolston Lyman Bond (to National Oil Products Co., Inc.). USP 2 385 940, October 2, 1945. An agent for making textiles water repellent comprises a salt or phenate of compounds of the general formula:



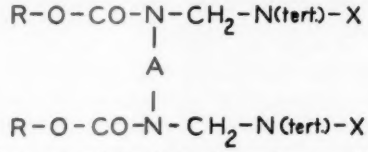
where R_1 is an alkyl radical containing 12 to 22 carbon atoms; R_2 is hydrogen or an alkyl radical containing 12 to 22 carbon atoms; R_3 "in each occurrence, and independently of any other occurrence, represents an alkyl radicle containing up to 4 carbon atoms"; and n is 1 or 2. The process of making these salicylamide derivatives by condensing 1 mol of the salicylamide with 1-2 mols of formaldehyde is claimed also. Eight of the examples disclose the conditions for preparing the compounds, and two show the method of using them to treat cotton cloth.

WATER REPELLENTS. Water-repellency agents and processes of making and using the same. Maurice Arthur Thorold Rogers (to Imperial Chemical Industries, Ltd.). USP 2 386 140, and 2 386 143, October 2, 1945. Organic ammonium compounds, useful as water-repellents and resistant to laundering and dry-cleaning, have the general formula



where R is an aliphatic hydrocarbon radical containing at least seven carbon atoms, X is a halogen, and $N(tert.)$ stands for a tertiary aliphatic or heterocyclic amine. The process of manufacturing these compounds from the halogenomethyl compound of the appropriate structure and a tertiary amine is claimed also. Examples cited in the specification give conditions for: the reaction of distearyldiaminomethane and paraformaldehyde to give a compound of the right skeleton, which is reacted with pyridine or with triethylamine to introduce the tertiary nitrogen groups; and the reaction of urea and N,N-di-(N - chloropyridinomethyl) - distearyldiaminomethane. Examples also show how to treat plain calico, viscose and cellulose acetate rayon, and wool delaine with these agents. In one case, the agent is generated in situ. USP 2 386 143 makes claim to the method of treating textiles with these compounds and to the textiles so treated.

WATER REPELLENTS. Process of treating textile materials. Maurice Arthur Thorold Rogers (to Imperial Chemical Industries, Ltd.). USP 2 386 141-2, October 2, 1945. Textiles are made soft and water-repellent by impregnating them with not less than 0.5% by weight of the material, with a quaternary ammonium salt of the formula



where R is an aliphatic hydrocarbon radical of at least seven carbon atoms; X is halogen; A is a divalent organic radical, either aliphatic or aromatic, free of substituents that react with formaldehyde; and $N(tert.)$ stands for a tertiary aliphatic or heterocyclic amine. After impregnation, the material is heated in the absence of moisture between 90 and 200°C. to bring about chemical reaction as evidenced by the decomposition of the salt. The resulting materials are claimed also. Examples show the use of various compounds for treating calico, viscose and acetate rayons, and wool delaine; and the methods for synthesizing several of the compounds. However, the process for making the compounds and the compounds themselves are claimed in USP 2 386 142.

WATERPROOFING. Waterproofing treatment of materials. Francis J. Norton (to General Electric Co., Inc.). USP 2 386 259, October 9, 1945. "Normally non-water-repellent material" is waterproofed by treating it with the oily product obtained by hydrolyzing a methyldihalogenosilane of the formula CH_3SiHX_2, where X represents chlorine or bromine.

WATER REPELLENT. Permanent waterproofing product and process of making it. Raymond A. Pingree (to Warwick Chemical Co., Inc.). USP 2 386 631, October 9, 1945. A process for making a waterproofing compound for treating textiles comprises heating montan, candelilla, carnauba or beeswax with one of the following: phosphorus trichloride, phosphorus pentachloride, sulfuryl chloride, and thionyl chloride; heating the reaction product of wax and chloride with an aliphatic nitrile containing at least 10 carbon atoms and an aldehyde until the reaction ceases; and heating the reaction product with a tertiary amine until a product dispersible in water has been obtained. The composition is said to waterproof permanently wool, viscose and acetate rayon, cotton, and nylon.

VIII, 3. Proofing against microbiological attack

ROTPROOFING. The rotproofing of heavy textiles. Ordnance Laboratories, Cawnpore. *J. Sci. Indus. Research* (reference not cited). Reprinted in *Indian Textile J. 55,* 721-4 (July 1945). Various relatively well known methods of rotproofing heavy textiles for military use are described. The disadvantages for use in India of most of these

treatments are the cost of the reagents and the fact that they have to be imported. Tannins indigenous to India can be employed for a one-step dyeing and rotproofing treatment for materials to be dyed to approved camouflage shades, if they (the tannins) are mordanted in the presence of copper compounds. The copper increases the light-fastness of the tannins. The amount required is lower than for normal copper rotproofing. Hot, plasticized pitch and emulsions of used "gear oil" "available wherever there is motor transport" are recommended for treatments in the field. Indigenous essential oils, such as thymol, are effective. Common chemical, physical, and biological tests for rotproofness are described briefly.

ROTPROOFING. Proofing textiles against rot, mould and mildew. M. Hopley and J. R. F. Jackson. *Textile Recorder 63,* No. 749, 41-2, 59 (August 1945). The common agents for use in preserving textiles against molds and microorganisms (rot) are discussed, and their drawbacks are pointed out. Salicylanilide ("Shirlan") is one of the best mildewproofing agents available; mercaptobenzthiazole and 2,2′-dichloro; 5,5′-dihydroxydiphenylmethane are coming into favor. Chromium and copper compounds insoluble in water are used to protect cotton from rotting. The methods of applying these compounds are discussed.

VIII, 6. Shrinkproofing

SHRINKPROOFING WOOL. Application of Melamine resins to woolen fabrics. Donald H. Powers, Monsanto Chemical Co. *Cotton (U. S.) 109,* No. 7, 99-100 (July 1945). Felting and shrinkage of wools on washing are minimized without affecting the softness and resilience of the fibers by treating them with melamine-formaldehyde resins, of which Resloom is one. The resins are applied in aqueous solution. After the excess solution is removed by squeezing and the water has evaporated, the cloth is heated in a carbonizer to convert the resin to a form insoluble both in water and all dry cleaning solvents. Data show the percentage shrinkage of wool treated with 0, 4, 6, 8, and 10% Resloom after three washing tests, and with 0, 9 and 17% after one and 10 washings; the tensile strength of fabric containing 0, 4, 9 and 19% Resloom; and the effects on shrinkage of treating with 8% Resloom all-wool shirting, flannel, and blanket cloth, and all-wool shirting containing 2% wool grease. A photograph shows woolen fabric treated with Resloom coming from the drier.

SHRINKPROOFING WOOL. The action of ethylene sulphide on wool. S. Blackburn and H. Phillips, Wool Industries Research Association. *J. Soc. Dyers & Colourists 61,* 203-4 (August 1945). Experimental evidence is given to prove that under the conditions it is used to shrinkproof wool, ethylene sulfide reacts with the disulfide sulfur of wool.

The probable chemistry of the shrinkproofing reaction is outlined.

SHRINKPROOFING WOOL. Chlorination formula shrink-proofs wool hose. William M. Rush, Powell Knitting Co. *Textile World 95,* No. 6, 115 (June 1945). Lightweight and cushion-sole hose containing 50-70% wool can be made shrinkproof by wet chlorination. The goods are wet out in rotary dyeing equipment with water at 65-70°F., and treated with sufficient borax, hi-test calcium hypochlorite solution, and sodium bisulfite, added in that order and with intermediate mixing, to bring the solution in the bath to 1%, 4½%, and 1% strength, respectively. The hose are rinsed twice with water at 110-20°. They are then ready for dyeing.

SHRINKPROOFING WOOL. Preventing shrinking of wool. Australian P. 119 761. "Two English inventors" according to *Textile J. Australia 20, 220* (July 20, 1945). Wool or blends of wool with other fibers is made shrinkproof by pumping through it a dilute solution of sodium or calcium hypochlorite saturated with carbon dioxide. The carbon dioxide is added to the liquor in its solid form. At the beginning of the treatment the temperature should be under 10°C. and the pH at or slightly above 9.

VIII, 7. Proofing against chemicals, solvents, perspiration, etc.

ACID-RESISTANT CLOTH. Acid-resistant Vinyon shirts. Anon. *Am. Dyestuff Reptr. 34, 374* (September 10, 1945); *Am. Wool Cotton Reptr. 59,* No. 37, 3 (September 1945). Shirts made of "Vinyon" are worn by employees of the American Viscose Corp. who are exposed to contact with acids in the spinning rooms. The shirts are not intended to protect their wearers from burns, but they are remarkably resistant to acid and "are giving exceptional service".

TREATING CELLULOSE. Processes for treating cellulose matter and resulting product. Christopher Luckhaupt (to Luckite Processes, Inc.). USP 2 387 801, October 30, 1945. Cellulosic material is oil-proofed by impregnating it with molten terpene hydrochloride.

TREATING CELLULOSE. Rendering cellulosic fibres resistant to swelling. Heberlein & Co. A. G. Brit. P. 568 258. Cellulosic material is made resistant to swelling by treating it with formaldehyde in the presence of large amounts of acids which have "high dissociation properties", and are relatively concentrated, but have no parchmentizing action under the conditions used. The treatment is continued until the cellulose is not longer soluble in the usual cuprammonium solution. In one example, mercerized cotton voile is treated with a solution containing 20 cc. technical formaldehyde per

liter and dried at 40°C. at high tensions. It is then passed full with through sulfuric acid (40 Be.) at a temperature of 70°. The immersion time is 15 seconds. This treatment is followed by washing out and hot soaping. The dressing and drying is performed in the usual manner.

IX. TESTING AND ANALYSIS; SPECIFICATIONS

MEASUREMENTS. The numbers in our notebooks. C. Ross Bloomquist, Interchemical Corp. *Interchem. Review 4,* 49-59 (Summer 1945). "The problems which arise in calculating data and drawing conclusions from laboratory experiments" are discussed with the aid of examples. The discussion covers the sorts of errors which enter into the numbers put down in notebooks, significant figures, the conventions used in writing very large and very small numbers and the methods of handling such numbers, propagation of errors, precision of measurement, and dispersion of data. The bibliography lists 18 references "for more extended reading".

IX, 1. Physical and Mechanical

FILM FORMATION. Film formation and structure of some oil emulsions. Irma M. Felber, Michigan Agricultural Experiment Station. *J. Agricultural Research 71,* 231-54 (September 15, 1945). A study of oil emulsions used for spraying plants, in which the sprays were applied chiefly to microscope slides and the resulting films photographed, "reports observations on variations in film structure, as influenced by (1) certain changes in the composition of the emulsion, (2) changes in method of application, and (3) differences in the character of the surface to which they are applied".

QUALITY CONTROL. Statistical methods in quality control. IV. Subgrouping of data—finding causes of trouble. Am. Institute of Elec. Engineers Sub-Comm. on Educational Activities. *Elec. Eng. 64,* 328-9 (September 1945). Subgrouping of data is one of the most effective ways of "tracking down trouble" when the frequency distribution of quality measurements shows trouble to exist. Subgrouping shows whether the raw materials, the machines, or the workers are causing the difficulties. An example of its use is included.

TESTING DEVICE. Load-elongation recorded by new device. Harry C. Brown, Lowell Textile Institute. *Bull Lowell Textile Institute* Series 48, No. 2 (February 1944). Abs. *Textile World 95,* No. 6, 123, 125 (June 1945). Equipment for stretching fibers and yarns at a constant rate is described in detail with the aid of a photograph, a diagram, and a graph of the results. The device is chain-loaded. Apparatus operating in conjunction with it permits electronic plotting of the load-elongation curve. Tests specimens are held vertically in jaws which are pulled apart at a speed of 0.65 in.

per min. by a small motor, which also turns the recording drum. The lower jaw is fastened to a balance arm to which is attached the loading chain. The balance arm is horizontal when there is no load on the test specimen. When the specimen is loaded, the slight upward movement of the balance arm makes an electric contact in the grid circuit of a thyratron tube causing a second motor to add an amount of chain to the arm equal to the tension in the yarn. If too much chain is added, an electric contact on the lower side of the arm reverses the motor through a second thyratron. This second motor also moves the recording pen to trace the load-elongation curve.

IX, 1b. Yarns

REGULARITY TESTER. New yarn scanner measures diameter variations. Anon. *Textile World 95,* No. 6, 139 (June 1945). The short-length variability of cotton yarn is determined continuously and continuously recorded by a photoelectric yarn scanner developed in the Reid and Stark Mills of the U. S. Rubber Co. The scanner has a one-light source which illuminates two light-sensitive tubes through a slit in front of each. "Yarn to be tested passes through one slit while the other is adjusted to set the zero of the meter at a convenient place on the scale. Meter deflection is noted as the shadow of the yarn passes over the photoelectric tube. The variant is then registered on automatically controlled charts." The diameters of the cotton are measured microscopically and by filar micrometers against steel wires of known diameters. "They are then calibrated against a glass stage micrometer ruled in thousandths of an inch. In this way, the meter readings obtained from the machine are directly reducible to absolute standards . . . For the first time in history, it is possible to obtain by a practicable routine procedure a frequency distribution curve for yarn diameter, measured in lengths shorter than ½ in. These tests are non-destructive, and do not alter the yarn in any way . . ."

IX, 1c. Fabrics; foils; films

"BLACK LIGHT". "Black Light" saves time, money. Anon. *Am. Wool Cotton Reptr. 59,* No. 37, 86 (September 13, 1945). Filtered, near-ultraviolet light, termed "Black Light" simplifies the inspection of fabrics for defects and for the source of the raw materials, dyes, and finishes used in their manufacture. Lamps providing these rays also aid in the location of stains and spots due to improper carbonizing and scouring, and of pulled wool mixed with fleece. These facts were supplied by J. Cornell Richardson, Black Light Products, Chicago.

TESTING COLORFASTNESS. Colour fastness tests. A. R. Docking, Munitions Supply Laboratories, Australia. *Textile J. of Australia 20,* 241-4 (July 20, 1945). A review article citing 17 references makes a plea for the production of more

serviceable fabrics and outlines the methods of test adopted in England and the United States, for testing the fastness of dyes to weather (light, atmospheric fading, and rain), cleansing (washing, including pressing, and drycleaning), and wear.

THICKNESS GAGE. Thickness gauge for textile materials. I. G. McDonald, British Cotton Industry Research Association. *J. Textile Institute 36,* T185-90 (August 1945). An instrument for measuring the thickness of textiles "to within 0.002 inch across any part of a specimen 1 foot square and up to 1¾ inches thick at pressures which may be varied between 0.001 and 10 lb. per square inch" is described. The thickness is measured between a fixed base and a moveable foot. The movement of the foot is magnified by causing it to rotate a small cylinder to which a long pointer is attached. The adjustment and calibration of the instrument and the test procedure are discussed. Four diagrams clarify the description of the tester.

X. WASTE RECOVERY AND UTILIZATION; WASTE PREVENTION

X, 1. Fiber wastes

WASTE RECOVERY. Apparatus for recovering waste materials. Gale T. Pearce and Grover C. Rhodes (to Johns-Manville Corp.). USP 2 386 975, October 16, 1945. Apparatus for separating discrete particles from a mixture of fibers and particles comprises a nozzle for a fluid jet; a conical baffle, including an apex spaced from and in line with the nozzle; a housing around the nozzle and leading to a point near the baffle—the baffle overlies the adjacent end of the housing; means for supplying a fluid medium under pressure to the nozzle; and "fluid pressure means" supplied by the first means for conveying a mixture of particles and fibers into position to be impelled against the baffle by the jet issuing from the nozzle.

X, 3. Mill affluents and waste disposal; stream pollution

TREATING LIQUIDS. Impure liquid treating apparatus. Douglas C. Reybold and Anthony J. Fischer (to The Dorr Co., Inc.). Can. P. 430 409, October 2, 1945. Apparatus for treating impure liquids comprises primary and secondary settling tanks, means for passing sedimented material from the secondary tank, means for feeding impure liquid to the primary tank, a launder disposed for receiving supernatant liquid outflowing from the primary tank, a trickling filter-bed of discrete material in the primary tank, a partition dividing the filter-bed into a primary and a secondary section, a floor structure for the bed having a sump for each filter section to receive effluent from the filter section to which it corresponds, valve-controlled means for passing from the launder some of the "supernatant outflowed liquid" in it and for distributing some of the liquid thus passed on the primary filter

section some on the secondary filter section, means for transferring effluent from the sump corresponding to the primary and secondary filter sections into the primary and secondary tanks, respectively, a well associated with the secondary tank for receiving "as outflowed liquid supernatant liquid from the secondary tank", means for releasing as effluent from the well some of the liquid in it, and means for passing from the well back to the secondary filter section some of the liquid in the well.

XI. CLEANSING

DETERGENT. Detergent bars or cakes. Emil Edward Dreger and Adam Carr Bell (to Colgate-Palmolive-Peet Co., Inc.). USP 2 385 614, September 25, 1945. Detergent bars or cakes contain as a major ingredient solid salts of the sulfuric-acid ester of diglycerides of long-chain fatty acids.

CLEANING APPARATUS. Fabric cleansing apparatus. Raymond J. Ridge (to Canadian Westinghouse Co., Ltd.). Can. P. 430 910, October 30, 1945. Apparatus for cleaning fabrics is made up of a cylindrical drum for holding the body of cleaning fluid (water is mentioned in one claim) and the fabrics to be treated, means for rotating the drum about a horizontal axis at a speed in revolutions per minute in excess of

$$(2933/\text{drum radius in feet})^{0.5}$$

so that the fabrics are elevated from the cleaning fluid and carried centrifugally to an upper region of the drum, and means for disengaging the fabrics from the drum in the upper region and for directing them across the drum into the body of cleaning fluid.

XI, 1. Laundering

WASHING MACHINE. George W. Dunham (to General Electric Co., Inc.). USP 2 383 783, August 28, 1945. A washing machine consists of a stationary tub; an agitator in the tub having a central hub, a bottom disk, and five or more radial, circumferentially spaced blades carried by the hub and disk; and means for oscillating the agitator about its axis at a speed of the order of 300 complete oscillations per minute and through a stroke of the order of 60°. The blades are rounded at their lower, outer ends, and are tapered from the lower, outer ends inwardly and upwardly along the central hub. The shape of the blades and the motion of the agitator are such as to generate radial water currents "causing rapid turnover of clothes being washed in the tub without effecting substantial oscillating circumferential movement of the water and clothes about the tub".

DETERGENT COMPOSITION. James Kenneth Gunther (to Industrial Patents Corp.). USP 2 385 075, September 18, 1945. A non-caking cleanser comprises a mixture of "a predominant amount" of finely divided silica and not in excess of about 30% by weight of finely divided, water-

soluble, alkaline, alkali metal phosphate, to which is added sufficient finely divided calcium silicate to prevent caking.

WASHING MACHINE. Means for transmitting oscillatory motion. Peter Eduard Geldhof and Vernon J. Wooster (to Nineteen Hundred Corp.). USP 2 385 623, September 25, 1945. An oscillatory drive mechanism for a washing machine comprises "a drive member, a member to be driven, reciprocating means secured to said drive member, coupling means for connecting said reciprocating means and said member to be driven, slidable means associated with said reciprocating means for selectively connecting said reciprocating means in driving relation with said coupling means".

WASHING MACHINE. Domestic laundry unit. Allen J. Patch (to Robert W. Lamont). USP 2 387 407, October 23, 1945. In a domestic laundry unit there are a tub for washing clothes, a rinse tub along one side of the wash tub, a second rinse tub along another side of the wash tub at right angles to the first rinse tub, and means to wring and transfer clothes from the wash tub to the first rinse tub and from the first rinse tub to the second rinse tub. These means include co-acting wringer rolls whose bite is close to the water line in the three tubs to transfer the clothes rapidly so that they do not expand and absorb air to prevent their quick sinking in the rinse water.

WASHING MACHINE. Green O. Thaxton (¼ to Dottie Carroll). Can. P. 429 872, September 4, 1945. A washing machine comprises a rotary drum divided into several compartments, a steam supply, a steam box at each end of the drum, distributing tubes from the box to some of the compartments, and a communicating line from one box to the other.

DETERGENT. Coleman Reeves Caryl (to American Cyanamid Co., Inc.). Can. P. 430 757, October 23, 1945. A detergent composition in solid cake form comprises a water-soluble salt of a di(n-octyl) sulfosuccinate and boric acid in the ratio of 5 to 15% by weight of the former to 95 to 85% of the latter.

XII. HAZARDS; SAFETY PRECAUTIONS

XII, 3. Occupational poisoning and diseases

TUBERCULOSIS. Tuberculosis in industry. K. P. Mody, Tata Memorial Hospital, Bombay. *Indian Textile J. 55,* 699-701 (July 1945). Indian mill owners are urged to (a) institute sick-benefit plans for their employees to care for those who develop tuberculosis, and (b) install equipment for making periodic x-rays of the chests of all workers to detect the disease in sufficiently early stages that it can be cured. The methods of contraction and spread of tuberculosis are discussed, but no statistics are given on the prevalence of the disease in the population as a whole or in workers.

XIII. TEXTILE MILLS

COST REDUCTION. Greater profits can be made by reducing costs. Value of a cost reduction department to textile mills. Charles Delmar Townsend, Process Engineer. *Textile Age 9,* No. 9, 44, 46, 48 (September 1945). "Every textile manufacturing concern having more than 25 employees should have a specialized department whose function is the reduction of costs . . . managed by . . . a graduate engineer, whose background in manufacturing methods is . . . not confined to the textile field alone, . . . to coordinate the costs of operating and manufacturing as collected by the cost accounting department with the actual mill-production records submitted by the manufacturing division. By comparison of these figures with standard costs the . . . manager can easily determine the present operational costs. A study can be made of variations and a decision reached as to whether . . . the fluctuations from the standard costs are justified. A cost reduction department always studies the needs of the manufacturing division for new and improved equipment . . . Besides the analysis of costs, the cost reduction department is so organized that the layout of the manufacturing equipment is continually studied . . . The principal economic advantages gained are the reduction of waste, material and labor, standardization of processes and procedures and a closer control on raw material costs . . ." These cost-reduction departments are said to be much cheaper in the long run than maintaining separate time-study and project engineering departments, and than having consulting engineers survey mills periodically.

DELIVERY SCHEDULES. Planned production keeps Callaway deliveries on schedule. G. H. Williams, Callaway Mills. *Textile World 95* 108-9 (June 1945). Deliveries from the Callaway Mills are made on schedule by accepting orders only if equipment at the mill is available, scheduling the work, and requiring daily and weekly reports for study by the key men. Typical daily and weekly schedules and reports illustrate the fairly detailed discussion of the manner in which the reports are made out and used.

PRODUCT CONTROL. Production board controls 200 Botany yarn items. Anon. *Textile World 95,* No. 6, 127 (June 1945). Visual control charts were adopted by the Top & Yarn Mfg. Division of the Botany Worsted Mills to keep track of work in process, work to be done, delivery dates, etc., on the 200 items it manufactures. Each control board is 3½ by 8 ft. and is punched with 20,000 holes into which colored plastic pegs may be plugged. At the left of the board is a vertical bank of record cards on which is posted all permanent information concerning each order. Each vertical line represents a week, each horizontal one a spezific order. Vertically suspended strings indicate dates materials should go into production. Pegs of

various colors show the order has or has not been OK'd by the matching department, and has been approved for manufacture; material has been released for manufacture; the amount of yarn delivered; and the state of the stocks of the yarn.

LABOR RELATIONS. Labor-management problems discussed at the New England Council's 80th Quarterly Meeting in Boston. Anon. *Fibre & Fabric 98,* 6 (September 22, 1945). Problems facing labor and management were discussed by representatives of both groups at the New England Council's 80th quarterly meeting. C. Lawrence Munch, Hood Rubber Co., warned that "If labor refuses to assume some responsibility for the public good, it faces the same disaster that befell management when government regulation shackled it after it had surrendered its rights . . . by ignoring its responsibilities." He stated that the worst weakness of management is in handling grievances, half-hearted cooperation with union representatives, and paying too little attention to foremen. Robert Watt, A. F. of L., whose speech is quoted extensively in *Fibre & Fabric,* emphasized as labor's chief problems "wages, the veteran problem, and the work week".

TEXTILE WORKERS. Textile industry needs older workers. Waldemar Schweisheimer, M. D. *Textile Colorist & Converter 67,* 870-1 (July 1945). Many of the reasons commonly given for not hiring workers over 45 years old are shown to be untenable by means of extensive quotations from surveys of the textile and other industries. (Unfortunately no references are cited.) These surveys reveal that older skilled workers are fully as efficient as younger workers, are much more stable, have fewer accidents and are less susceptible to industrial poisons, have unimpaired ability to learn new skills and to reason, have better judgment, and have increasingly greater skill in discriminating color as they get older, even though color vision itself becomes impaired with age. If women workers passing through the menopause are handled understandingly and are given medical assistance, "their maturity, experience and judgment" will prove valuable to their employers.

TRAINING WORKERS. Apprenticeship training in the textile industry. I & II. W. Ernest Spain, War Manpower Commission. *Cotton (U. S.) 109,* No. 6, 109-12 (June 1945); No. 7, 101-4 (July 1945). Veterans in apprenticeship. *Ibid.* No. 9, 107-9 (September, 1945). Conferences between the Apprentice-Training Service of the War Manpower Commission and representatives of the textile industry resulted in the development of programs for training skilled mechanics for the carding, spinning, and weaving room. The first and last require three years, the second two years to teach the would-be mechanics the operation, maintenance, adjustment, and repair and overhaul of the machines. The initial training of the mechanics

as operators is held imperative. Development of standards, i. e., a written outline of training procedures for a given trade or factory; the value of uniform standards; and the use of standards in the training of apprentices in the textile industry are the main topics in the second article. It is pointed out that the daily work of the apprentice should be supplemented with related technical instruction. In the discussion of veterans in apprenticeship, the "G. I. Bill of Rights" is reviewed briefly; and information is given veterans on eligibility for apprenticeship, rates of pay during training, and on how to identify bona fide apprenticeship programs.

TRAINING WORKERS. Operator instruction covers worsted spinning mill. F. E. Cleyn, Spinners, Ltd. *Textile World 95,* No. 6, 104-5 (June 1945). A handbook prepared by Spinners, Ltd., Huntington, Quebec, for the instruction of new employees in its worsted spinning mill, contains simple rules in English and French for the tending of machines doing drawing and gilling, weighing, ring roving, ring spinning, ring twisting, and winding. Sample pages are shown. The handbook is for sale for 10¢ from the Huntington Gleaner, Huntington, P. Q. Canada.

TRAINING WORKERS. Learning—and liking it. Alfred S. Moore. *Fibres, Fabrics & Cordage 12,* 309, 311 (August 1945). The cotton and linen industries in Great Britain need new workers. If they are to be attracted from other industries, must be offered good working conditions and proper training. Textile schools run by factories are recommended highly as a means of training recruits.

WAGES. Modernizing textile wages. I-II. Theodore W. Kheel, National War Labor Board. *Textile Age 9,* No. 8, 88-91 (August 1945); No. 9, 95-6 (September 1945). A brief outline of WLB's action in the textile field says in part: "Collective bargaining . . . between 54 companies and the Textile Workers Union of America, CIO, was ordered by the National War Labor Board in an effort to establish properly aligned wage rate structures for each plant . . . In the South . . . 321 voluntary applications for wage adjustments were approved . . . during May alone . . . An analysis of the applications indicates . . . that all the 321 textile firms were granted permission to make the five-cent across-the-board increases; 75 per cent gained permission to establish a 55-cent minimum wage in their plants and at least 50 per cent won authority to pay a five-cent premium to third shift workers . . ."

WORKERS' DEMANDS. Textile workers' union defines program for peacetime conditions. Anon. *Can Textile J. 62,* No. 19, 25, 27 (September 21, 1945). The annual conference at Ottawa of the United Textile Workers of America in September was concerned with Canadian textile workers' views on wages, income tax, housing, etc. The

union wants the union shop and check-off, seniority protection, wage equality with other large Canadian industries, forty-hour week with no reduction in take home pay, fifty-five cents minimum rate for all experienced workers, two weeks' vacations with pay. It also wants a large-scale housing program to be started immediately, and income tax exemptions to be $1000 for a single, and $2400 for a married person.

XIII, 2. Machinery

CANVAS GOODS. New devices in the manufacture of canvas goods. Anon. *Jute & Canvas Review 17,* 11 (August 1945). Devices developed by the American Fabrics Co. to expedite the manufacture of military canvas goods and mentioned by the president of the company on the receipt of the Army-Navy E award are: a table with a slanting top and a roll at the lower end over which the canvas slides, "waterfall-fashion", making it unnecessary for an operator to lift the canvas when it has to be pushed on; home-made equipment for mildew-proofing certain bindings; a foot-operated knot-tying machine; and an "x"ing and boxing machine. The efficiency of the firm was attributed largely to the unique training program for new employees.

INTEGRATING PLANTS. Chem. & Met. report on integration of chemical plant facilities. *Chem. & Met. Eng. 52,* No. 9, 129-36, 138-41 (September 1945). Hercules Powder Co.'s ethyl cellulose plant at Hopewell, Va., is described in great detail to show how a modern plant can be integrated.

CLOTH FEED. Cloth feeding apparatus. L. C. Nield (to Tootal Broadhurst Lee Co., Ltd.). Brit. P. 567 953. A device for feeding cloth to a stenter, etc., consists of a drum having radial pins which can move in or out to engage or disengage the material. When engaged by the pins, the material intersects the path of the engaging mechanism of the stenter and is transferred.

XIII, 3. Power

XIII, 3b. Electric

BEARING WEAR. Shaft currents cause excessive bearing wear. D. B. Hoover, Westinghouse Electric Corp. *Textile Age 9,* No. 9, 58, 60-1 (September 1945). Electric currents flowing in shafts of industrial electric motors and generators and passing through the oil film separating the shaft and the bearings cause the bearings to wear very rapidly. In this sort of wear, the surface of the bearing is covered with fine pits, and, if the current is very heavy, the shaft itself will have pit marks. Bearing currents are detected by holding a cable, with one end fastened to the bearing housing, to the rotating shaft. The appearance of persistent sparks denotes the presence of currents. To avoid these currents, the bearing may be insulated or the current may be shunted out of the bearing by a method

shown in a diagram. Causes of these currents are mentioned.

ELECTRIFICATION. Electrification in the flax industry. Anon. *Textile Recorder 63,* No. 749, 54 (August 1945). Metropolitan Vickers Electrical Co., Ltd., has been installing electric machinery in the flax mills at Belfast of Wm. Ross & Co., Ltd. Fans have been placed on the Marr driers. The dried flax is bundled in an electrically driven press.

XIII, 4. Materials handling and transport

CUTTING FABRIC. Fabric cutting system. Samuel Cohn. USP 2 387 386, October 23, 1945. Apparatus for cutting an edge of a traveling fabric tube includes a spreader bar engaging an edge of the tube, and positioning and tensioning the edge for cutting; a cutter associated with it; a moving belt for transporting the fabric; a driven mandrel for winding up the cut fabric; and means keeping the cut edge from lateral displacement. These last means consist of an extension of the spreader passing over the cut edge as it leaves the cutter, and roll means adjacent to the wind-up mandrel.

REWINDING MECHANISM. Elmer W. Coffey (to H. P. Smith Paper Co., Inc.). USP 2 387 644, October 23, 1945. A machine for winding webs of paper, cloth, etc. upon a spool comprises a vertical spindle for the spool, a pair of driving rolls contacting peripherally and rotating the stock on the spool, means for supporting the spindle for movement away from the driving rolls as the diameter of the rolled stock on the spool increases, and biasing means for the supporting means for retaining the roll of stock "in uniform peripheral driven contact" with the driving rolls.

XIII, 5. Lighting

COLOR CONDITIONING. Color in the plant. Faber Birren. *Dupont Mag. 39,* No. 4, 10-15 (October 1945). This, and two supplementary anonymous articles on pp. 9 and 16, show by colored illustrations the value of "color conditioning" for factories. Proper choice of paints improves the visibility and ease of seeing work, and the safety of operating machinery. The Paul Whitin Manufacturing Co. and Ashland Corp., both textile manufacturers, have "color conditioned" plants.

XIII, 7. Process control; control instruments

PNEUMATIC CONTROLLERS. "Tuning" a pneumatic controller to the process. E. D. Nuneviller and J. P. Vollrath. *Instrumentation 1,* No. 5, 27-9 (July-August 1945). The systematic method (as opposed to the cut-and-try method) of setting Brown *Air-o-Line* Controllers is described in detail with the aid of diagrams and photographs.

THERMOMETRY. Response time and lag of a thermometer element mounted in a protecting case. W. N. Goodwin, Jr., Weston Electrical Instrument Corp. *Elec. Eng. 64,* T 665-70 (September 1945). "In this paper equations are derived and applied for

determining the response time and temperature lag, in general, of a body which exchanges heat with a medium indirectly through a second body. Application is made to a thermometer element mounted in a protecting case, with specific reference to a resistance-type thermometer such as is used for aircraft and marine purposes. The temperature distribution along the stem and the errors resulting when the head of the bulb and medium differ in temperature also are derived."

XIII, 8. Water supply

TREATING WATER. Water treating apparatus. Joseph F. Sebald (to Worthington Pump and Machinery Corp.). USP 2 383 068, August 21, 1945. A water-treating apparatus consists of a receptacle having a central raw water inlet at the bottom. The top part of the receptacle is for storing treated water. Below the storage space is a zone in which foreign matter is precipitated from the water. There is an outlet for the treated water. Between the inlet and the precipitation zone, and concentric with the vertical axis of the receptacle, is an annular passage-forming member, whose outer periphery is spaced in from the wall of the receptacle to form an annular mixing passage that discharges into the precipitation zone. An impeller forces raw water from the inlet into the annular mixing passage. Another impeller is located in the receptacle "to receive slurry constituting water and precipitate passing through said passage-forming member from said precipitation space and to discharge said slurry into said mixing passage for mixing with water discharged thereinto by said raw water impeller . . ." Means for operating the impellers is provided.

PURIFYING WATER. Water purifying method and apparatus. Frederick George Merckel (to Wallace & Tiernan Products, Inc.). Can. P. 429 868, September 4, 1945. Water is purified by passing it through a means for removing the solids at a rate controlled by a photoelectric device actuated by the degree of turbidity of the effluent.

WATER-TREATING APPARATUS. Merrill P. Robinson (to Worthington Pump and Machinery Corp.). Can. P. 430 848, October 23, 1945. In a water-treating apparatus there are a treating tank, including an outlet for treated water and inlet for chemicals; means for introducing raw water into the tank; "water circulation guiding means" through which the entering raw water passes, these means being constructed and arranged to recirculate part of the water and slurry through the tank; and means controlled by variances in the level of the clarified treated water in the tank for maintaining the flow of water through the apparatus substantially constant regardless of the amount of water withdrawn from the tank. This last means includes means for returning treated water from the tank to the "raw water introducing means".

XIV. TEXTILE RESEARCH

APPLIED SCIENCE. Bridging the gap between science and production. "Virtex". *Textile Recorder 63,* No. 749, 47, 49 (August 1945). To bridge the wide gap now existing in many fields between science and industry, "the scientist must . . . add the art of teaching to his other acquisitions" to "sell" his data, and "the practical man . . . must make some attempt to learn the jargon of the scientific world, and . . . realise the latent possibilities of the data presented to him". Between the two should be "a liaison man with a foot in either camp". "The practical man of the future may well have placed before him the choice of calling in the scientist or the Official Receiver."

RESEARCH MONEY. Carl S. Miner, The Miner Laboratories. *Chem. Eng. News 23,* 1522 (September 10, 1945). Research budgets too often have included in them "certain items whose inclusion in a research budget would be vetoed by any research executive worthy of that description". For example, items of referee testing, technical sales service, customer complaints, and product control "cannot, under any reasonable definition of research, be considered proper research expenditures".

RESEARCH LABORATORIES. New Standard Oil Co. (N. J.) research laboratories. Anon. *Chem. Industries 57,* 447 (September 1945). New research laboratories are to be built at Linden, New Jersey, and Baton Rouge, Louisiana, by the Standard Oil Co. (N. J.). They will be completed late in 1946 or early in 1947, will cost $8,000,000 by the time they are finished, and will supplement but not replace the existing research laboratories in both locations.

RESEARCH LABORATORY. [U. S. Finishing Co.] opens new research laboratory. H. S. Knowlton, New England Editor, *Textile World. Textile World 95,* No. 6, 137 (June 1945). A new research laboratory to employ about 12 people was opened on May 22 by the United States Finishing Co., Providence, R. I. The laboratory covers about 1600 sq. ft. of floor space. It "will be devoted primarily to advanced work in fundamental textile research covering both natural and synthetic fibers, as well as the development of new and improved dyeing and finishing processes." Some indication is given of the sorts of problems to be studied. The equipment is listed.

SCHOLARSHIP. Anon. *Am. Wool Cotton Reptr. 59,* No. 38, 24 (September 20, 1945). A scholarship of $1200 for graduate work in silk and nylon at Lowell Textile Institute was established by Joseph P. Kennedy in memory of his son.

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